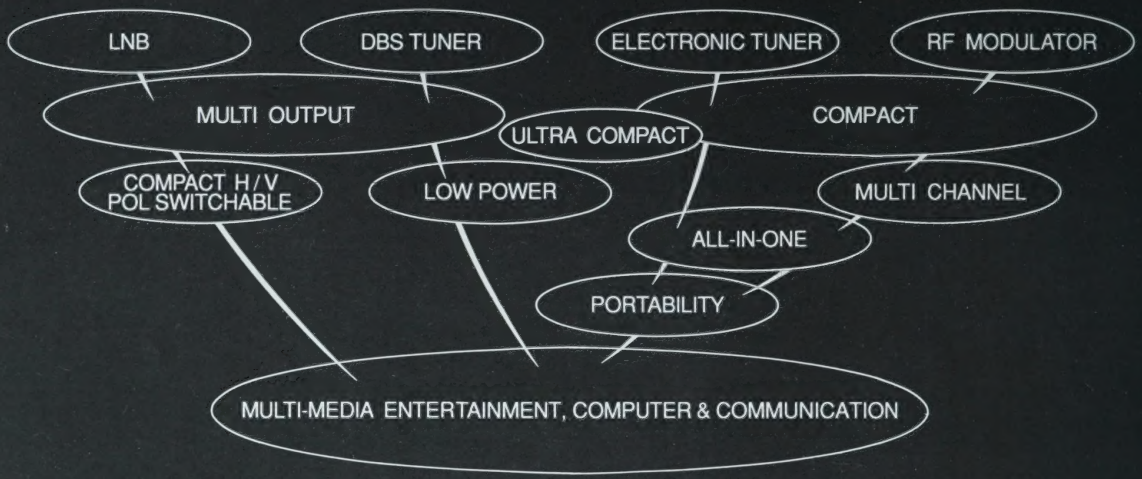
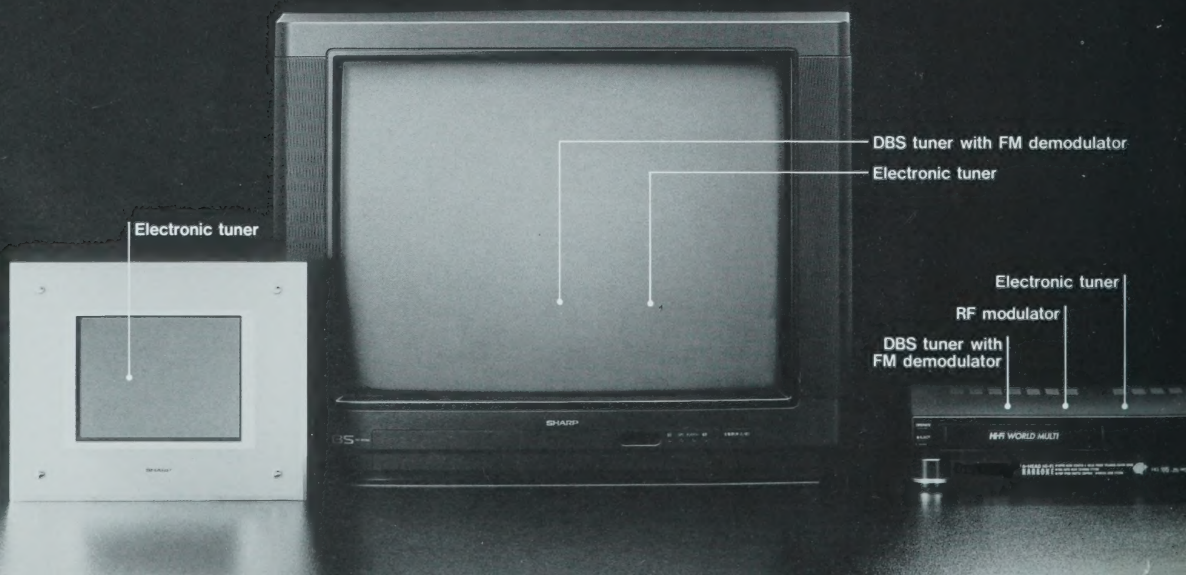
SHARP

RF Components
Vol. 2

Variety of RF components meets diversified requirements in high information era.

As we have been deeply moving into the era of new media and highly information oriented society, broadcasting receiving systems have been diversified with the relevant regulations and standards of each country being revised accordingly.
In these volatile environments, requirements for AV equipment computers have ever been intensified - for higher picture quality, larger display size and higher functions. Combining its long fostered RF circuit technologies and its unique leading-edge technologies, Sharp is here, ready to meet the ever changing and diversified requirements from customers with a wide range of RF components.





- RF Components
  - For satellite receiving system
    - LNB
    - DBS tuner
    - FM demodulator
  - For TVs/VCRs
    - Electronic tuner
  - RF modulator
  - For Computers (RF LAN)

LNB
Ku-band LNB
Compact type Ku-band LNB
Wide & Dual band LNB
Phase Locked Ku-band LNB
H/V Polarization LNB

DBS tuner
DBS tuner with FM demodulator
Ultra-compact DBS tuner with FM demodulator

Electronic tuner

RF modulator

SHARP RF COMPONENTS

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SELECTION GUIDE

Table of RF Components for Satellite Receiving Systems

Ku-band LNB

Type	Destination	Input frequency (GHz)	Output frequency (MHz)	Noise figure *2 (dB)	Supply voltage (V DC)	Model No.	Page
Ku-band LNB	U.S.A.(FSS)	11.7to12.2	950to1450	1.8(MAX)	13 to 20	BSCB83H00	6to7
	Europe (DBS)	11.7to12.5	950to1750	1.7(MAX)	13 to 20	BSCB85Z00	6to7
	Europe (ECS)	10.95to11.7	950to1700	1.5 (MAX)	13 to 20	BSCB86K00	6to7
	Europe (Telecom)	12.5to12.75	1025to1275	1.5 (MAX)	13 to 20	BSCB87K00	6to7
	Australia (Aussat)	12.25to12.75	950to1450	1.5 (MAX)	13 to 20	BSCB88K00 *1	6to7
	Japan (DBS)	11.71to12.01	1035to1335	1.6 (MAX)	13 to 20	BSCB80J00	6to7
Compact Type Ku-band LNB	U.S.A. (FSS)	11.7to12.2	950to1450	1.4 (MAX)	12 to 20	BSCC83L01	8to9
	Japan (DBS)	11.71to12.01	1035to1335	1.4 (MAX)	12 to 20	BSCC80L00	8to9
Wide & Dual-band LNB	Europe (ECS)	10.95to11.7	950to1700	1.5 (MAX)	12 to 24	BSCD85K00	10to11
	Europe (DBS)	11.7to12.5	950to1750	1.6(MAX)			
	Europe (ECS)	10.95to11.7	950to1700	1.6 (MAX)	12 to 24	BSCD86J00	10to11
	Europe (Telecom)	11.945to12.745	950to1750	1.6 (MAX)			
	Europe (ECS)	10.95to 11.7	950to1700	1.6 (MAX)	12 to 24	BSCW85J00	10to11
	Europe (DBS)	11.7to12.5	950to1750	2.0 (MAX)			
	Europe (Telecom)	12.5to12.75	1750to2000	2.0 (MAX)			
Phase Locked Ku-band LNB	U.S.A. (FSS)	11.7to12.2	950to1450	1.8 (MAX)	15 to 24	BSCE83H00	12to13
	U.S.A. (FSS)	11.7to12.2	950to1450	1.6 (MAX)	15 to 24	BSCE83J00	12to13
	Japan, Australia (Aussat)	12.25to12.75	950to1450	1.8 (MAX)	15 to 24	BSCE88H00	12to13
H/V Polarization LNB	Europe (ECS)	10.95to11.7	950 to 1700 *3	1.5 (MAX)	11.8 to 24	BSCH86K70	14to15
	Europe (ECS)	10.95to11.7	950 to 1700 *4	1.5 (MAX)	11.8 to 24	BSCH86K80	14to15

*1 Under development
*2 Other noise figure are available upon request.
*3 1-output
*4 2-output

DBS tuner with FM demodulator

Type <Volume>	Input port	Input frequency (MHz) <Distruction>	Intermediate frequency (MHz)	IF bandwidth (MHz) ✱✱1	Built-in PLL	Built-in Prescaler ✱✱2	Supply voltage (V)	Model No.	Page
<35cc>	BSFB 1	950to1450 <U.S.A.>	479.5	27	○		B1:12±0.5 B3:5±0.3	BSFB73G01	17to18
				27/15	○		B1:12±0.5 B3:5±0.3	BSFB73G02	17to18
				★	Option	Option ✱1	B1:12±0.5 B3:5±0.3 ✱2		
		950to1750 <Europe>	479.5	27		1/128	B1:12±0.5 B3:5±0.3	BSFB75G00	17,19
					○	1/256	B1:12±0.5 B3:5±0.3	BSFB75G12	17,19
				☆	Option	Option ✱1	B1:12±0.5 B3:5±0.3 ✱2		
		950to2050 <Europe>	479.5	27		1/128	B1:12±0.5 B3:5±0.3	BSFB77G00	17,20
				☆	Option	Option ✱1	B1:12±0.5 B3:5±0.3 ✱2		
		1035.98to1331.5 <Japan>	402.78	27	○	1/128	B1:9±0.5 B3:5±0.3	BSFB70E01	17,20
	BSFE 2	950to1450 <U.S.A.>	479.5	27/15	○		B1:12±0.5 B3:5±0.3	BSFE73G01	17,21
				★	Option	Option ✱1	B1:12±0.5 B3:5±0.3 ✱2		
		950to1750 <Europe>	479.5	27/32	○	1/256	B1:12±0.5 B3:5±0.3	BSFE75G02	17,21
				27		1/128	B1:12±0.5 B3:5±0.3	BSFE75G03	17,22
				☆	Option	Option ✱1	B1:12±0.5 B3:5±0.3 ✱2		
		950to2050 <Europe>	479.5	27/18	○	1/256	B1:12±0.5 B3:5±0.3	BSFE77G01	17,22
				☆	Option	1/128	B1:12±0.5 B3:5±0.3 ✱2		
<22cc> ✱✱3	BSFC 1	950to1750 <Europe>	479.5	27		1/128	5±0.5V	BSFC75G00	24to25
		1035.98to1331.5 <Japan>	402.78	31	○	1/128	5±0.5V	BSFC70E03	24to25
	BSFG 2	950to1750 <Europe>	479.5	27		1/128	5±0.5V	BSFG75G00 ✱2	24to25
<17cc> ✱✱3	BSFF 1	1035.98to1331.5 <Japan>	402.78	31	○		5±0.5V	BSFF70E01	24to25

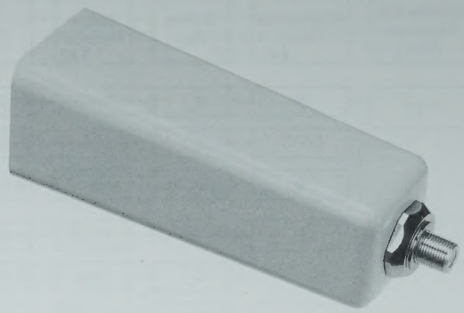
✱1 With Distribution function
✱2 Under development

✱✱1 If the intermediate frequency is 479.5MHz in BSFB/BSFE series, Arbitary 1 or 2 modes of the following IF bandwidth are also selectable upon request. ☆ 18, 22, 27, 32MHz ★ 15, 18, 22, 27, 32MHz

✱✱2 The following prescaler scaling factor of built-in prescaler type are selectable upon request. (standard 1/128, 1/256 or special 1/2, 1/64)

✱✱3 Digital AFC output, with-built-in keyed AFC circuit design.
For other specifications, please contact our sales subsidiaries.

Ku-band LNB



Model range: BSCB83H00/BSCB85Z00/BSCB86K00/BSCB87K00/BSCB88K00/BSCB80J00

FEATURES

Main Features

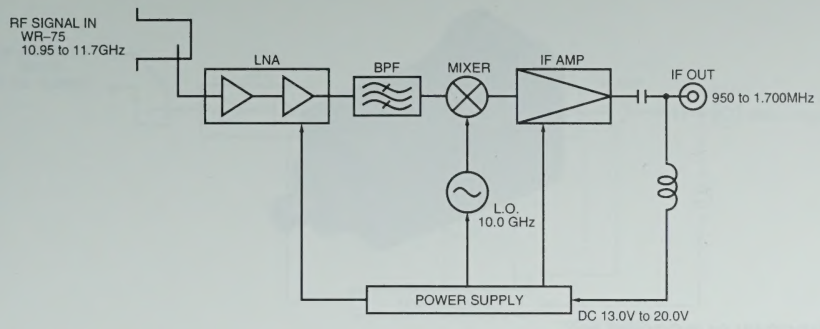
- Low noise performance, due to newly developed high gain FET drain mixer
- High reliability, due to integrating LNA, mixer and dielectric oscillator into one substrate
- Compact design
- Fully airtight design having a high resistance to environment (Employment of micro O-ring)

SPECIFICATIONS

Destination	U.S.A.	Europe			Australia	Japan
Reception band	FSS	DBS	ECS	Telecom	Aussat	DBS
Model No.	BSCB83H00	BSCB85Z00	BSCB86K00	BSCB87K00	*BSCB88K00	BSCB80J00
Input frequency (GHz)	11.7 to 12.2	11.7 to 12.5	10.95 to 11.7	12.5 to 12.75	12.25 to 12.75	11.71 to 12.01
Output frequency (MHz)	950 to 1450	950 to 1750	950 to 1700	1025 to 1275	950 to 1450	1035 to 1335
Output impedance (Ω)	75					
Conversion gain (dB)	56 min.	50 min.	50 min.	60 min.	60 min.	51 min.
Noise figure (dB)	1.8 max.	1.7 max.	1.5 max.	1.5 max.	1.5 max.	1.6 max.
Image rejection (dB)	40 min.	40 min.	40 min.	40 min.	40 min.	31 min.
Input VSWR	2.5 typ.					2.5 max.
Output VSWR	2.0 (max.)					
L.O. frequency (GHz)	10.75	10.75	10.00	11.475	11.3	10.678
Drift of L.O. freuqncy	±1.5 (–40 to + 60°C)					±1.5 (–30 to +50°C)
Supply voltage (V)	13 to 20 DC	13 to 20 DC	13 to 20 DC	13 to 20 DC	13 to 20 DC	13 to 20 DC
Waveguide	WR-75					WRJ-120 (WR-75)
Output connector	F type					
Weight (g)	300					

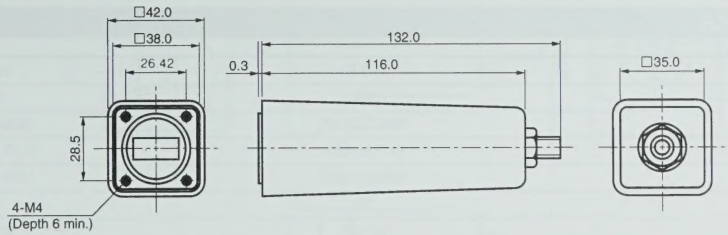
*Under development

INTERNAL BLOCK DIAGRAM



Model : BSCB86K00

OUTLINE DIMENSIONS (Unit: mm)



Model : BSCB83H00/BSCB85Z00/BSCB86K00/BSCB87K00/BSCB88K00/BSCB80J00

Compact Type Ku-band LNB

Model range: BSCC83L01/BSCC80L00

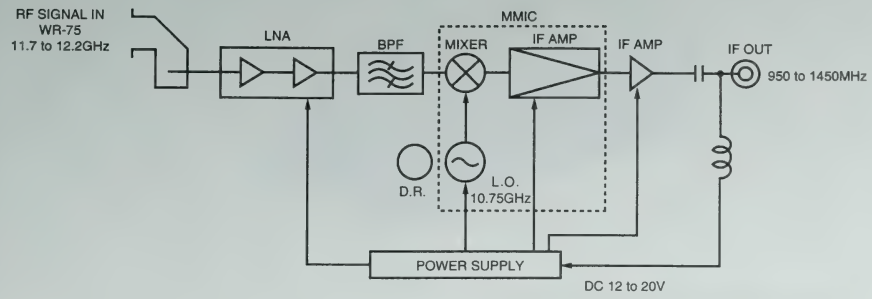
FEATURES

- The industry's smallest/the most lightweight design
  Volume: 85cc, weight: 100g
  (Reduction of 45% in volume and 65% in weight from SHARP's conventional BSCB type)
- Reduced input loss and simplified structure thanks to newly developed bent-type waveguide structure
  (Input loss: reduced by 0.1dB)
- High reliability due to reduced component count and high performance GaAs MMIC integrating the local oscillator/mixer/IF amplifier (Reduction of 50% in components count from SHARP's conventional BSCB type)
- The high performance HEMT thereby making it possible to minimize the noise figure to 1.2dB typ.

SPECIFICATIONS

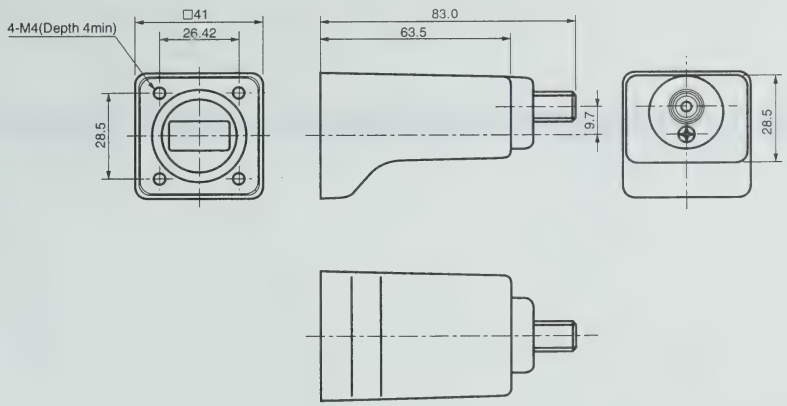
Destination	U.S.A.	Japan
Reception band	FSS	DBS
Model No.	BSCC83L01	BSCC80L00
Input frequency (GHz)	11.7 to 12.2	11.71 to 12.01
Output frequency (MHz)	950 to 1450	1035 to 1335
Output impedance (Ω)	75	75
Conversion gain (dB)	56 min.	51 min.
Noise figure (dB)	1.4 max.	1.4 max.
Image rejection (dB)	40 min.	31 min.
Output VSWR	2.0 max.	2.0 max.
L.O. frequency (GHz)	10.75	10.678
Supply voltage (V)	12 to 20	12 to 20
Waveguide	WR-75	WRJ-120 (WR-75)
Output connector	F type	
Weight (g)	100	

INTERNAL BLOCK DIAGRAM



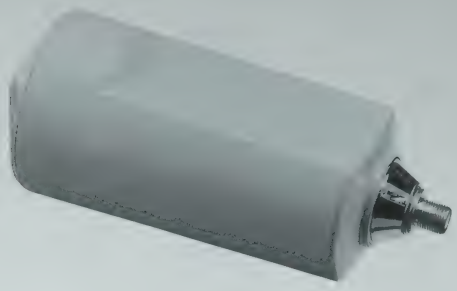
Model : BSCC83L01

OUTLINE DIMENSIONS (Unit: mm)



Model : BSCC83L01 / BSCC80L00

Wide & Dual-band LNB



Model range: BSCW85J00/BSCD85K00/BSCD86J00

FEATURES

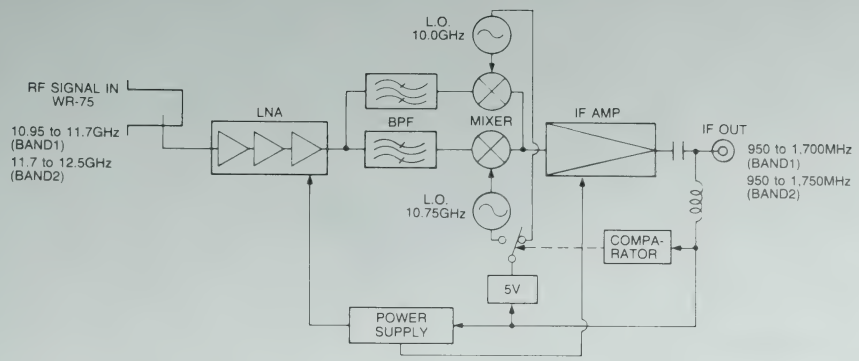
- Can receive multiple satellite signals due to switching of the local oscillator by changing the supply voltage via comparator
- Low noise design, due to adoption of a 3-stage amplifier using HEMT
- Realizes high reliability thanks to highly stable hermetic type dilectric oscillator
- Fully airtight design having a high resistance to environment

SPECIFICATIONS

	Wide Ku-band LNB			Dual Ku-band LNB			
Destination	Europe			Europe		Europe	
Reception band	ECS, DBS, TELECOM			ECS + DBS		ECS + TELECON	
Model No.	BSCW85J00			BSCD85K00		BSCD86J00	
Input frequency (GHz)	BAND1	BAND2	BAND3	BAND1	BAND2	BAND1	BAND2
	10.95 to 11.7	11.7 to 12.5	12.5 to 12.75	10.95 to 11.7	11.7 to 12.5	10.95 to 11.7	11.945 to 12.745
Output frequency (MHz)	BAND1	BAND2	BAND3	BAND1	BAND2	BAND1	BAND2
	950 to 1700	950 to 1750	1750 to 2000	950 to 1700	950 to 1750	950 to 1700	950 to 1750
Output impedance (Ω)	75			75			
Conversion gain (dB)	55 min.			53 min.			
Noise figure (dB)	BAND1	BAND2/BAND3		BAND1	BAND2	BAND1	BAND2
	1.6 max.	2.0 max		1.5 max.	1.6 max.	1.6 max.	1.6 max.
Image rejection (dB)	40 min.			40 min.			
L.O. frequency (GHz)	BAND1	BAND2/BAND3		BAND1	BAND2	BAND1	BAND2
	10.00	10.75		10.00	10.75	10.00	10.995
Supply voltage (V)	12 to 24			12 to 24			
Waveguide	WR-75			WR-75			
Output connector	F type			F type			
Weight (g)	480			480			

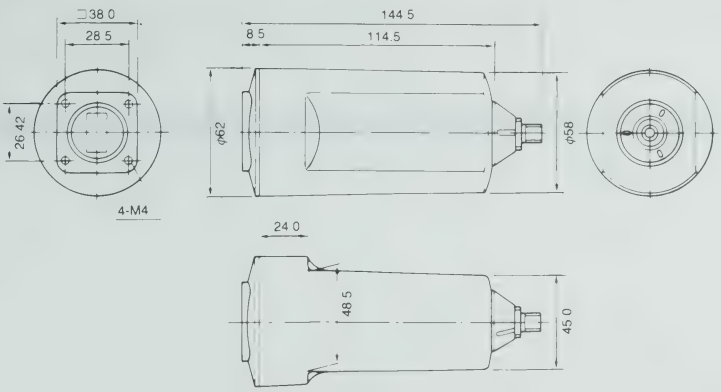
※ Products with different noise figure are also available upon request.

INTERNAL BLOCK DIAGRAM



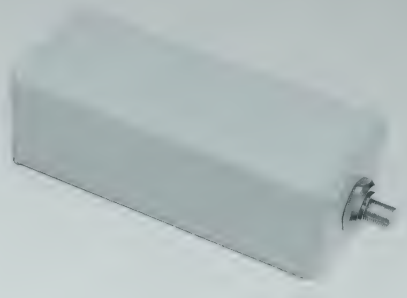
Model : BSCD85K00

OUTLINE DIMENSIONS (Unit: mm)



Model : BSCW85J00 / BSCD85K00/BSCD86J00

Phase Locked Ku-band LNB



Model range: BSCE83H00/BSCE83J00/BSCE88H00

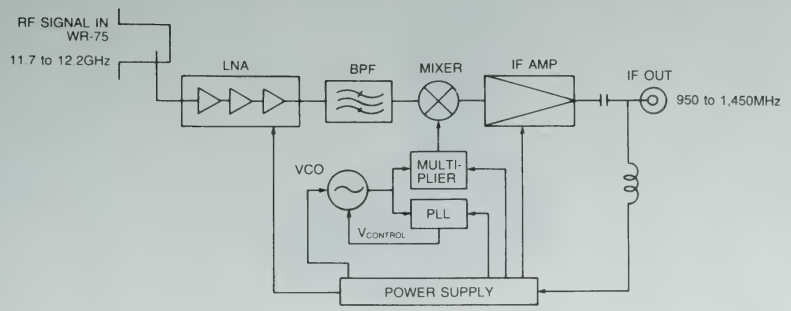
FEATURES

- Built-in high stable TCXO eliminates the need for external local injection terminal
- Lower drift of local frequency due to high-stability crystal oscillation technology (±0.11MHz)
- Low-phase noise design. (–80dBc/Hz at 10kHz)

SPECIFICATIONS

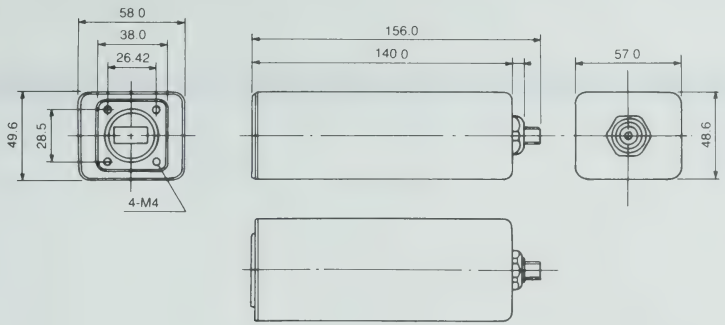
Destination	U.S.A.		Australia/Japan
Reception band	VSAT		Aussat
Model No.	BSCE83H00	BSCE83J00	BSCE88H00
Input frequency (GHz)	11.7 to 12.2		12.25 to 12.75
Output frequency (MHz)	950 to 1450		950 to 1450
Output impedance (Ω)	75		75
Conversion gain (dB)	56 min.		56 min.
Noise figure (dB)	1.8 max.	1.6 max.	1.8 max.
Image rejection (dB)	45 min.		40 min.
Input VSWR	2.5 max.		2.5 max.
Output VSWR	2.0 max.		2.0 max.
L.O. frequency (GHz)	10.75		11.3
Supply voltage (V)	15 to 24 DC		
Waveguide	WR-75		
Output connector	F type		
Weight (g)	550		

INTERNAL BLOCK DIAGRAM



Model : BSCE83H00 / BSCE83J00

OUTLINE DIMENSIONS (Unit: mm)



Model : BSCE83H00/BSCE83J00/BSCE88H00

H/V Polarization LNB

Model range: BSCH86K70

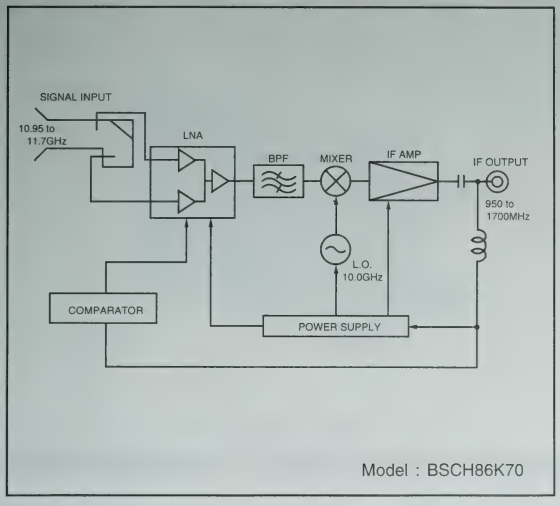
FEATURES

- Can receive all the channels from the Astra Satellite
- Superior cross-polar discrimination thanks to newly developed feeding waveguide structure with horizontal and vertical probes (25dB typ.)
- Conforms to FTZ standard
- High reliable design thanks to fully water-proof and air-tight structure

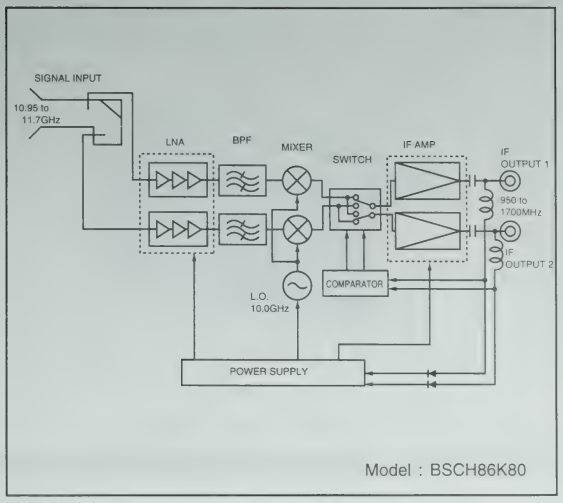
SPECIFICATIONS

Destination	Europe	
Reception band	ECS (H/V Polarization)	
Model No.	BSCH86K70 (1 output)	BSCH86K80 (2 output)
Input frequency (GHz)	10.95 to 11.7	
Output frequency (MHz)	950 to 1700	
Output impedance (Ω)	75	
Conversion gain (dB)	48 min.	
Noise figure (dB)	1.5 max.	
Cross-Polar discrimination (dB)	25 typ.	
Image rejection (dB)	80 min.	
L.O. spurious radiation at signal input (dBm)	– 60 max.	
L.O. frequency (GHz)	10.00	
Supply voltage (V)	11.8 to 24 DC	
Switching method for H/V LNB	Voltage comparator	
Waveguide	Feed-Horn	
Output connector	F type (Single)	F type (Dual)
Weight (g)	300	350

INTERNAL BLOCK DIAGRAM

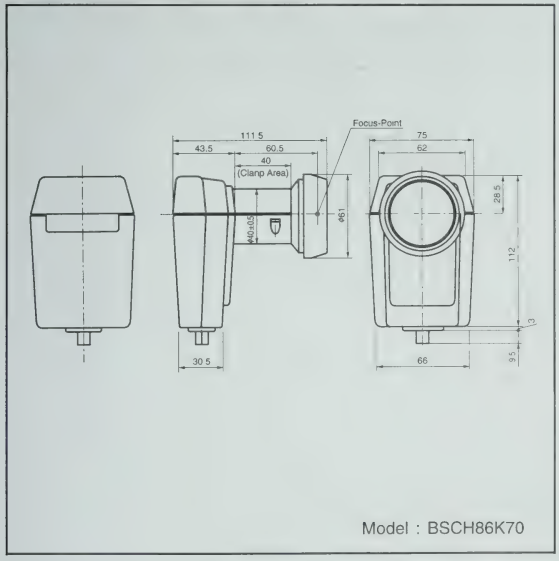


Model : BSCH86K70

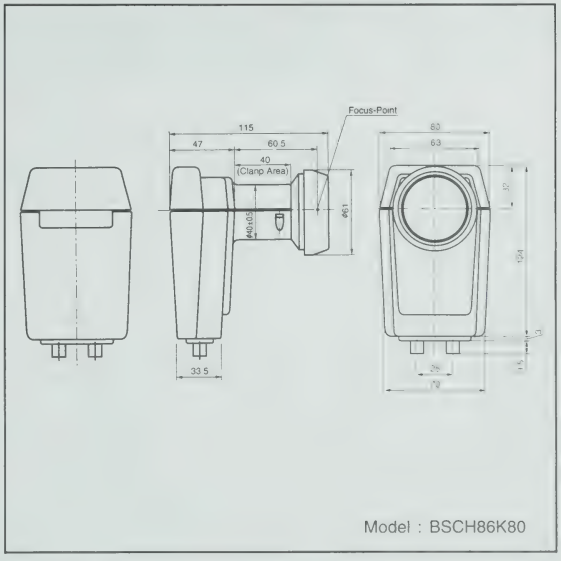


Model : BSCH86K80

OUTLINE DIMENSIONS (Unit: mm)



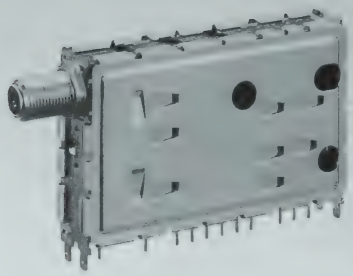
Model : BSCH86K70



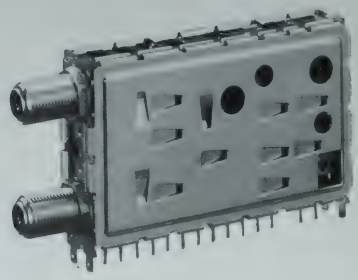
Model : BSCH86K80

Note: No-feed-horn version (BSCJ86K70) of BSCH86K70 conformed to C-120 is under development.

DBS tuner with FM demodulator (35cc type)



BSFB (1-input) type



BSFE (2-input) type

FEATURES

- Compact and low-height design for thin VCR / TV with built-in BS tuner
  Height : 39mm, volume : 35cc
- Low-power consumption : 65% (1.8W) of SHARP's conventional BSFA Series
- High reliability due to reduced component count achieved by the adoption of IC and improvement in the automation rate of component mounting
- A wide lineup of models which meet various input requirements is avaialble
  (1-input type/2-input type/1-input, wide-band type)

SPECIFICATIONS

■ 1-input type

Destination	U.S.A.		Europe		Europe	Japan
Model No.	BSFB73G01	BSFB73G02	BSFB75G00	BSFB75G12	BSFB77G00※2	BSFB70E01
Input frequency (MHz)	950 to 1450		950 to 1750		950 to 2050	1035.98 to 1331.5
Output baseband frequency	50Hz to 10.5MHz		50Hz to 10.5MHz		50Hz to 10.5MHz	50Hz to 9.0MHz
Output level (V_{PP})	0.8 typ.		0.8 typ.		0.8 typ.	0.78 typ
Intermediate frequency (MHz)	479.5		479.5		479.5	402.78
IF bandwidth (MHz)	27※1	27/15※1	27※1		27※1	27
Channel selection system	Electronic tuning with PLL synthesizer		Electronic tuning	Electronic tuning with PLL synthesizer	Electronic tuning	Electronic tuning with PLL synthesizer
Input impedance (Ω)	75					
Noise figure	12 typ.					10 typ.
Image rejection (dB)	40 typ.					55 min. ※3
Intermodulation rejection (dB)	60 typ.					60 typ.
Input VSWR	3.0 max.					2.5 max.
Differential gain	± 4% max.					± 4% max.
Differential phase	± 4° max.					± 4° max.
S/N (dB)	38 or more (C/N = 14dB)					38 or more (C/N = 14dB)
Supply voltage (V)	12 ± 0.5/5 ± 0.3 DC					9 ± 0.5/5 ± 0.3 DC
LNB power	25V DC, 350mA max.					15 DC, 250mA typ.
Prescaler voltage (V)	5 ± 0.3 DC					5 ± 0.3 DC
Tuning voltage (V)	18 DC		0.6 to 20 DC	20 DC	0.6 to 25 DC	9 DC
Input connector	F type					

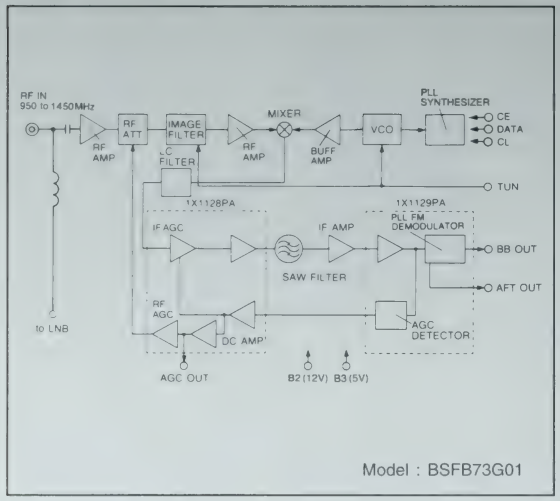
※1 Arbitary 1 or 2 modes of the following IF bandwidth are also selectable upon request.
32, 27, 22, 18 MHz
※2 Wide band type
※3 A value specified in "Satellite Broadcasting Receiving Equipment Test", Vol.3 issued by Dempa Gijutsu Kyokai Inc.

■ 2-input type

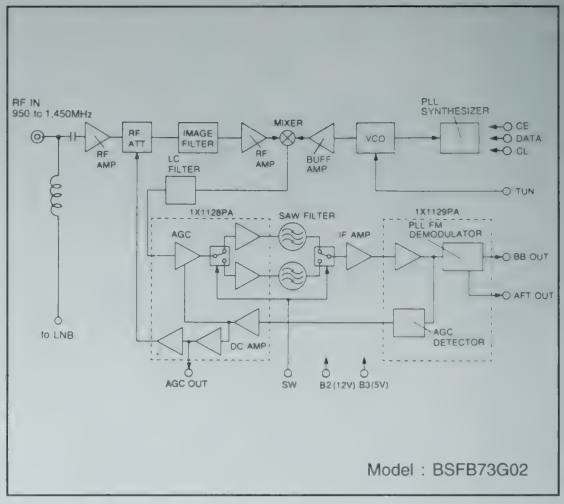
Destination	U.S.A.	Europe		Europe
Model No.	BSFE73G01	BSFE75G02	BSFE75G03	BSFE77G01※2
Input frequency (MHz)	950 to 1450	950 to 1750		950 to 2050
Output baseband frequency	50Hz to 10.5MHz	50Hz to 10.5MHz		50Hz to 10.5MHz
Output level (V_{PP})	0.4 typ.	0.4 typ.		0.4 typ.
Intermediate frequency (MHz)	479.5	479.5		479.5
IF bandwidth (MHz)	27/15※1	27/32※1	27※1	27/18※1
Channel selection system	Electronic tuning with PLL synthesizer		Electronic Tuning	Electronic tuning with PLL synthesizer
Input impedance (Ω)	75			
Noise figure	12 typ.			
Image rejection (dB)	40 typ.			
Intermodulation rejection (dB)	60 typ.			
Input VSWR	3.0 max.			
Differential gain	±4% max.			
Differential phase	±4° max.			
S/N (dB)	38 or more (C/N = 14dB)			
Supply voltage (V)	12 ± 0.5/5 ± 0.3 DC			
LNB power	25 DC, 250mA typ.			
Prescaler voltage (V)	5 ± 0.3 DC			
Tuning voltage (V)	18 DC	20 DC	0.6 to 20 DC	25 DC
Input connector	F type			

※1 Arbitary 1 or 2 modes of the following IF bandwidth are also selectable upon request.
32, 27, 22, 18 MHz
※2 Wide band type

INTERNAL BLOCK DIAGRAM

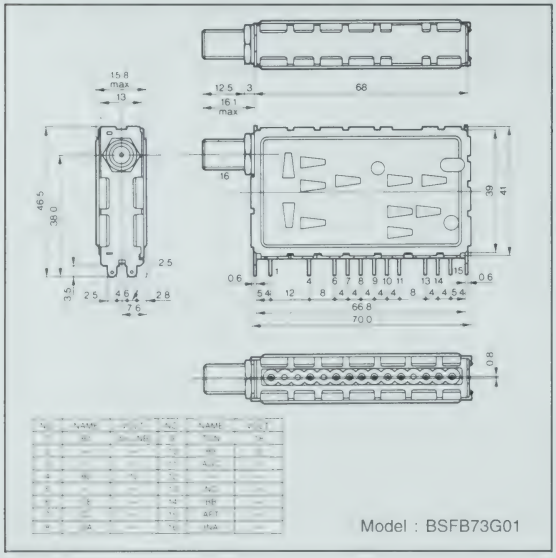


Model : BSFB73G01

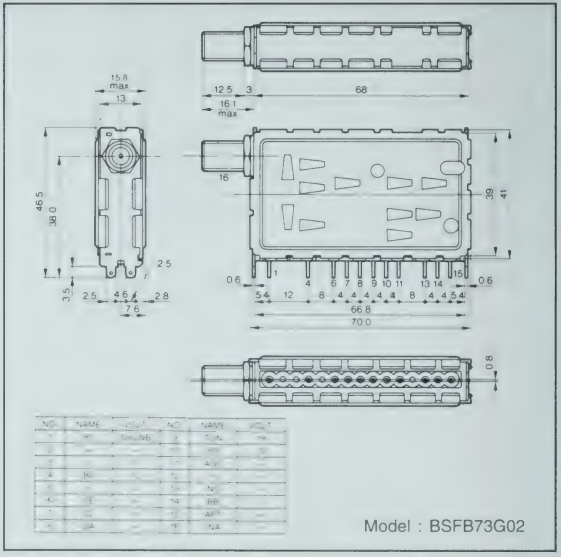


Model : BSFB73G02

OUTLINE DIMENSIONS (Unit: mm)

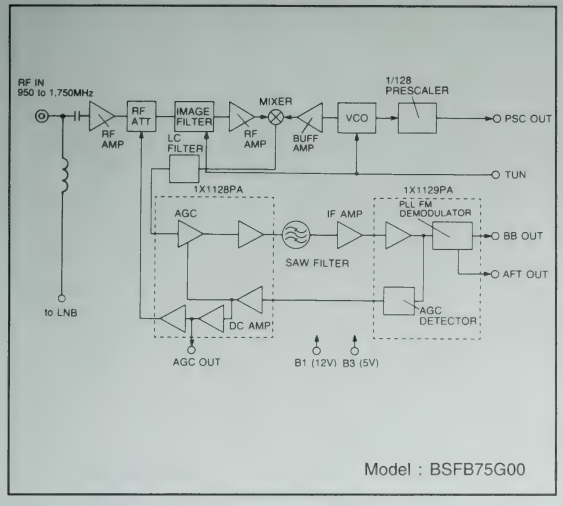


Model : BSFB73G01

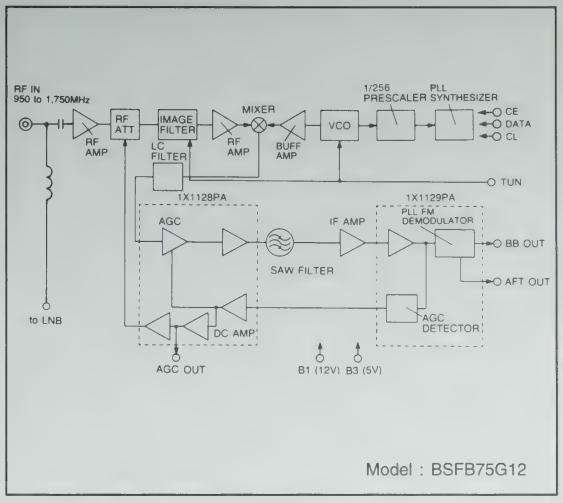


Model : BSFB73G02

INTERNAL BLOCK DIAGRAM

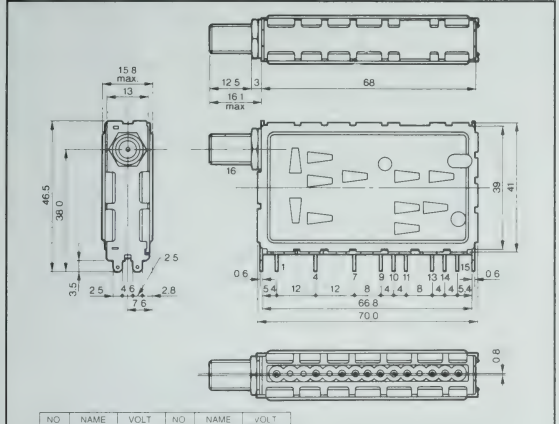


Model : BSFB75G00



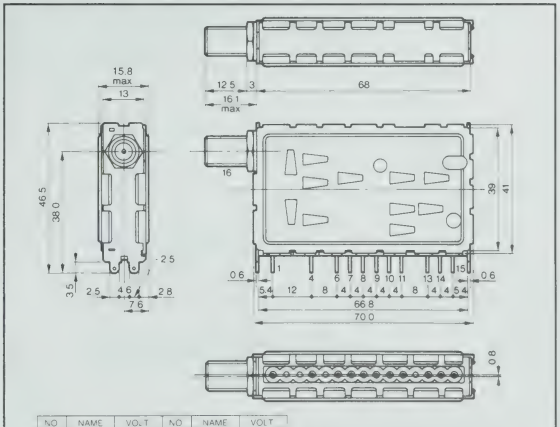
Model : BSFB75G12

OUTLINE DIMENSIONS (Unit: mm)



NO	NAME	VOLT	NO	NAME	VOLT
1	B1	(for LNB)	9	TUN	0.6 to 20
2	-	-	10	B3	5
3			11	AGC	
4	B2	12	12	–	
5			13	NC	
6		—	14	BB	
7	PSC		15	AFT	
8		—	16	INA	

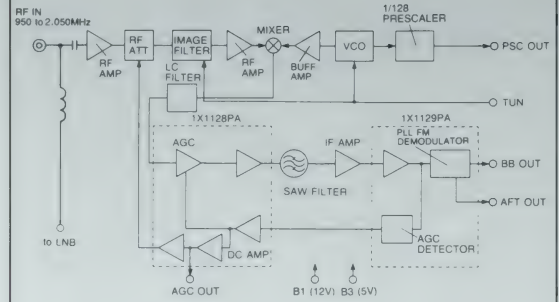
Model : BSFB75G00



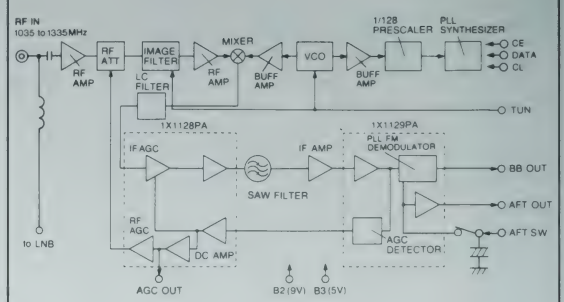
NO	NAME	VOLT	NO	NAME	VOLT
1	B1	(for LNB)	9	TUN	20
2	-	-	10	B3	5
3			11	AGC	-
4	B2	12	12	-	
5	-	-	13	NC	
6	CE		14	BB	
7	CL		15	AFT	
8	DA	—	16	INA	—

Model : BSFB75G12

INTERNAL BLOCK DIAGRAM

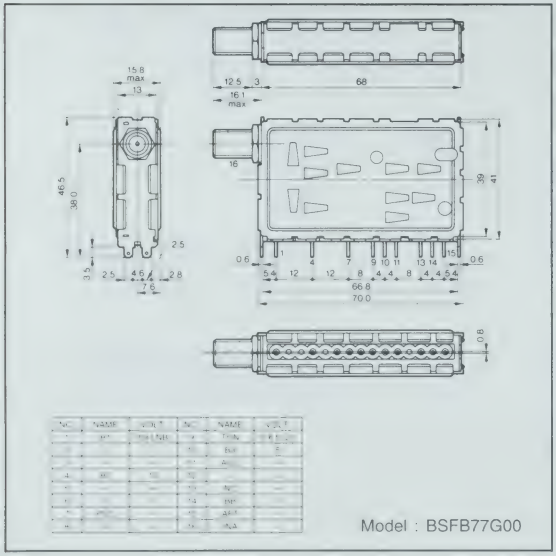


Model : BSFB77G00

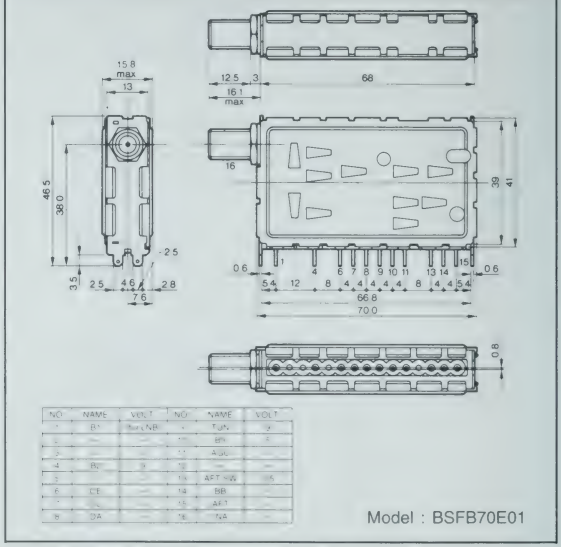


Model : BSFB70E01

OUTLINE DIMENSIONS (Unit: mm)

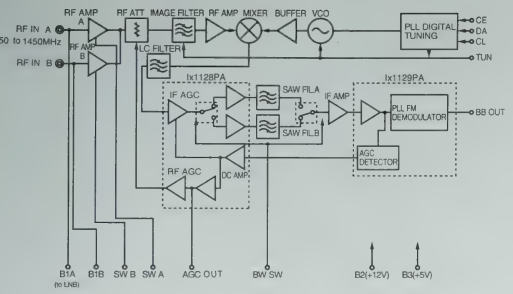


Model : BSFB77G00

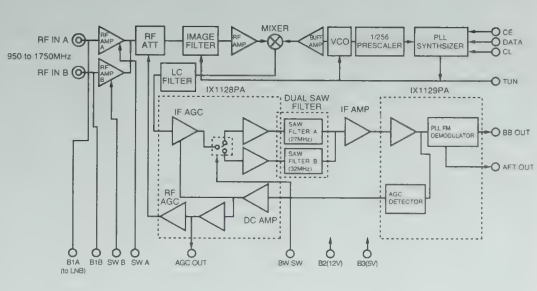


Model : BSFB70E01

INTERNAL BLOCK DIAGRAM

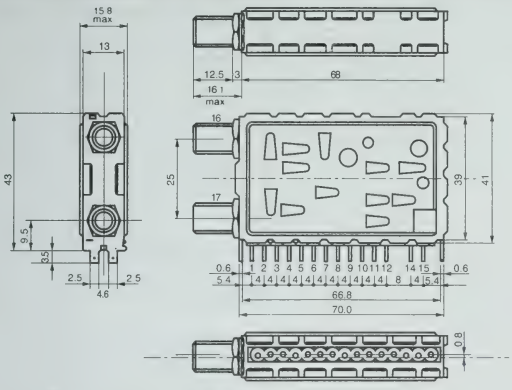


Model : BSFE73G01



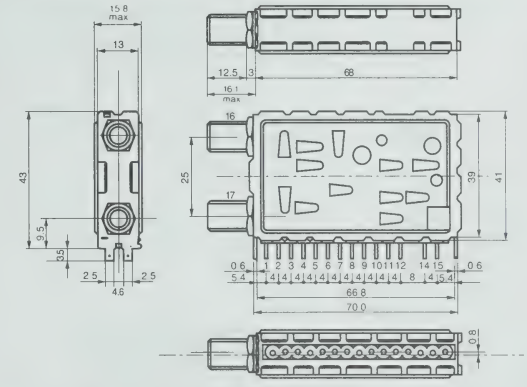
Model : BSFE75G02

OUTLINE DIMENSIONS (Unit: mm)



NO	NAME	VOLT	NO	NAME	VOLT
1	B1B	--	10	B3	+5
2	SWB	+5.0	11	AGC	--
3	B1A	--	12	BW SW	+12.0
4	B2	+12	13	--	--
5	SWA	+5.0	14	BB	
6	CE		15	NC	
7	CL		16	IN A	--
8	DA	--	17	IN B	
9	TUN	+18			

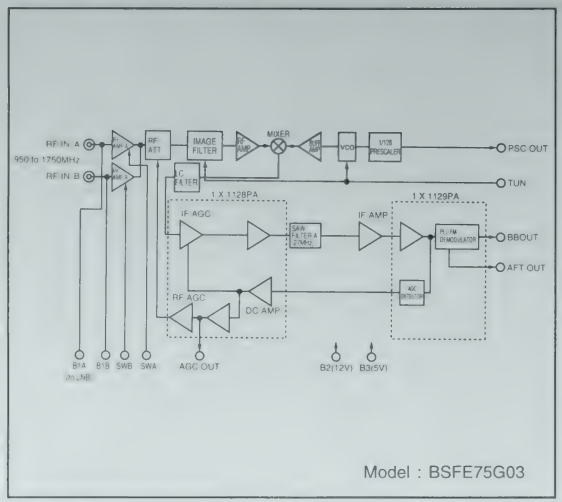
Model : BSFE73G01



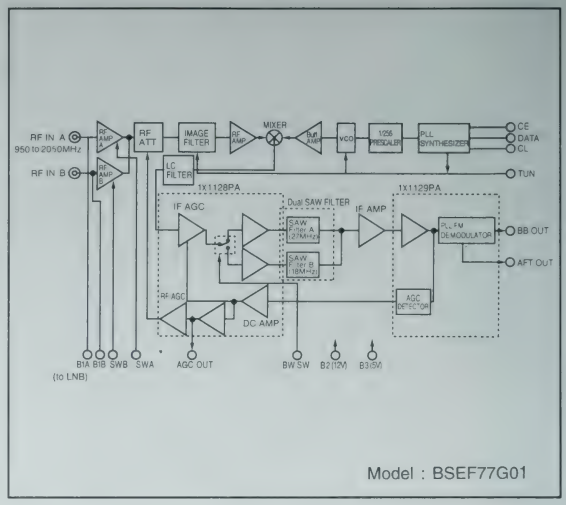
NO	NAME	VOLT	NO	NAME	VOLT
1	B1B	--	10	B3	+5
2	SWB	+5.0	11	AGC	--
3	B1A	--	12	BW SW	+12.0
4	B2	+12	13	--	--
5	SWA	+5.0	14	BB	
6	CE		15	NC	
7	CL		16	IN A	
8	DA		17	IN B	
9	TUN	+18			

Model : BSFE75G02

INTERNAL BLOCK DIAGRAM

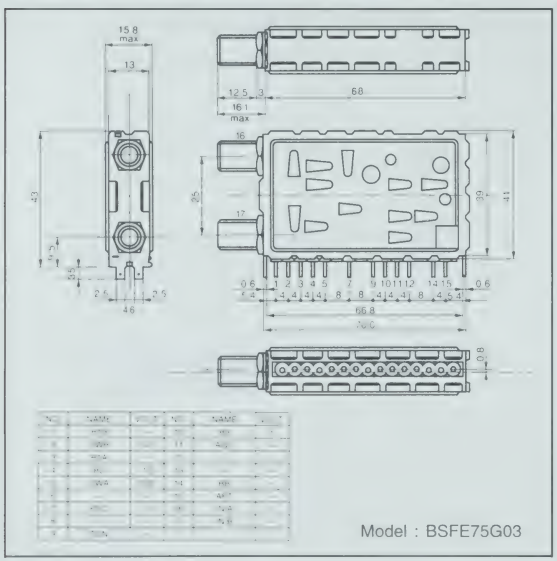


Model : BSFE75G03

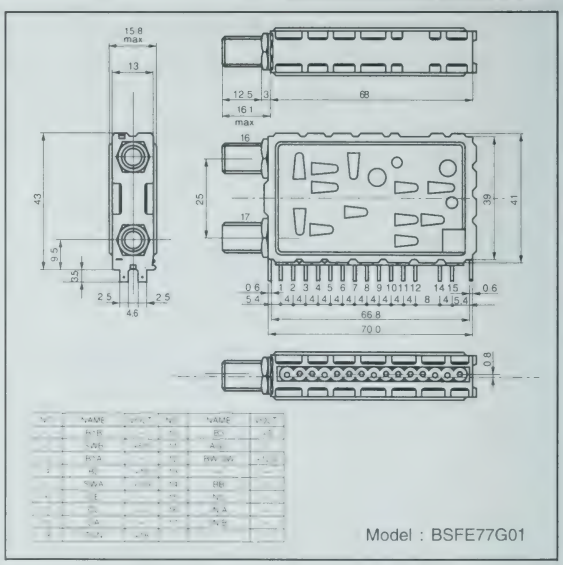


Model : BSEF77G01

OUTLINE DIMENSIONS (Unit: mm)

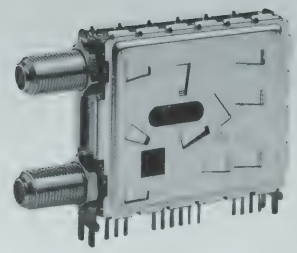


Model : BSFE75G03

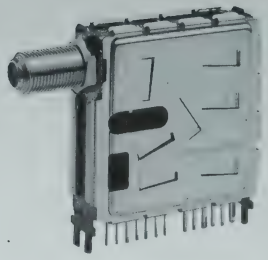


Model : BSFE77G01

Ultra-Compact DBS tuner with FM demodulator (22cc/17cc type)



BSFC (1-input with distributor) type



BSFF (1-input) type

FEATURES

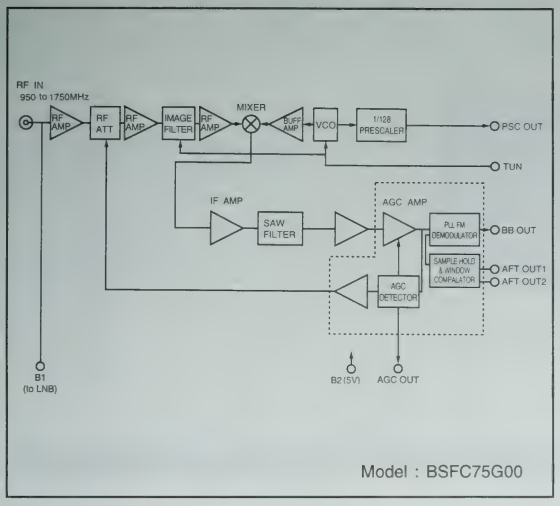
- Ultra-compact, lightweight design for thin VCR / TV with built-in BS tuner
  BSFF series → Volume : 17cc
  BSFC/BSFG series → Volume : 22 cc
- High reliability due to reduced component count achieved by the adoption of IC and improvement in the automation rate of component mounting
- Low-supply voltage, low-power consumption design
- Built-in digital AFC output and keyed AFC circuit for HDTV suitability

SPECIFICATIONS

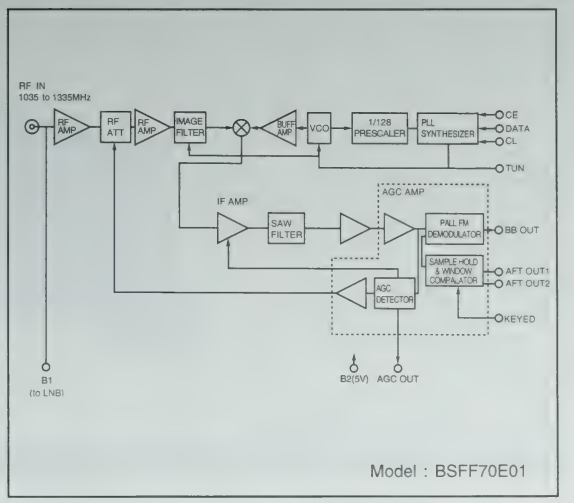
Destination	Europe		Japan	
Type	<22cc> 1-input	<22cc> 2-input	<22cc> 1-input with distributor	<17cc> 1-input
Model No.	BSFC75G00	★ BSFG75G00	BSFC70E03	BSFF70E01
Input frequency (MHz)	950 to 1750		1035.98 to 1331.5	
Output baseband frequency	50Hz to 10.5MHz		50Hz to 9MHz	
Output level (V_{PP})	0.8 typ.		0.8 typ.	
Intermediate frequency (MHz)	479.5		402.78	
IF bandwidth (MHz)	27		31	
Channel selection system	Electronic tuning		Electronic tuning with PLL synthesizer	
Input impedance (Ω)	75		75	
Noise figure	8 typ.		8 typ.	
Image rejection (dB)	55 min.		55 min. ※1	
Intermodulation rejection (dB)	60 typ.		60 typ.	
Input VSWR	3 max.		2.5 max.	
Differential gain	5% PP max.		5% PP max.	
Differential phase	5° PP max.		5° PP max.	
S/N (C/N = 14dB)	35 min		37 min	
Supply voltage (V)	5 ± 0.3 DC		5 ± 0.3 DC	
LNB power	25V DC, 350mA		15V DC, 4W	
Tuning voltage (V)	0.6 to 20		12 ± 0.5 DC	
Input connector	F type		F type	

※1 A value specified in "Satellite Broadcasting Receiving Equipment Test", Vol.3 issued by Dempa Gijutsu Kyokai Inc.
★ Under development

INTERNAL BLOCK DIAGRAM

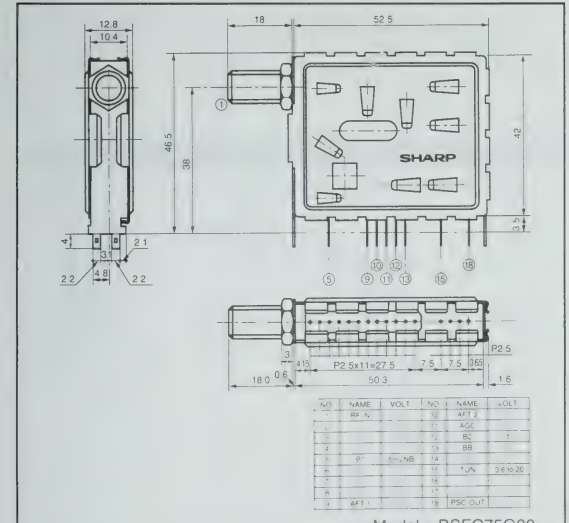


Model : BSFC75G00

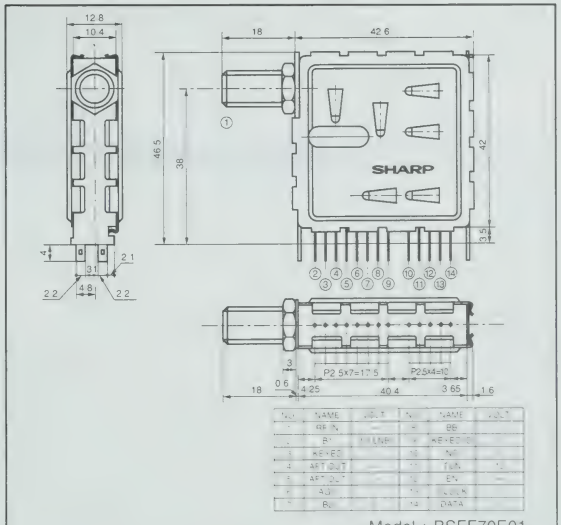


Model : BSFF70E01

OUTLINE DIMENSIONS (Unit: mm)

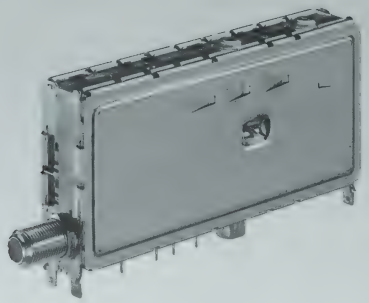


Model : BSFC75G00



Model : BSFF70E01

DBS Tuner



Model range : BSFA5CS0SE

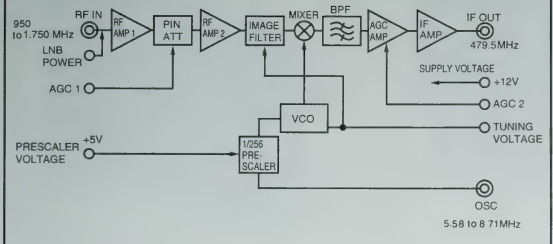
FEATURES

- Low-noise, compact design
- Excellent interference rejection capabilities
- AGC and AFT input terminals

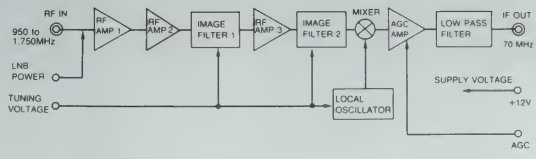
SPECIFICATIONS

Destination	Europe	
Model No.	BSFA5CS5YP	BSFA5CS0SE
Input frequency (MHz)	950 to 1750	
Output frequency (MHz)	479.5	70
IF bandwidth (MHz)	39	27
Channel selection system	Electronic tuning	
Input/output impedance (Ω)	75	
Power gain	18 typ.	13 typ.
Noise figure	12 typ.	14 typ.
Image rejection (dB)	45 typ.	25 typ.
Intermodulation rejection (dB)	60 typ.	
Input VSWR	2.5 max	
Supply voltage (V)	12 ± 0.5 DC	
LNB power	25V DC, 200mA typ.	
AGC voltage (V)	IF AGC voltage: 2.0 to 9.0 DC RF AGC voltage: 2.0 to 6.0 DC	1.0 to 5.0DC
Tuning voltage (V)	1.2 to 20 DC	0.8 to 20DC
Input connector	F type	
Output connector	RCA type	

INTERNAL BLOCK DIAGRAM

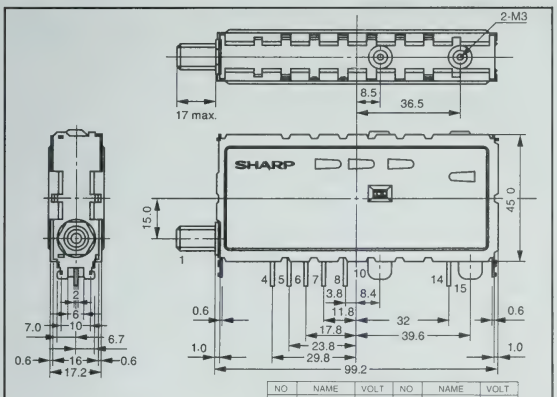


Model : BSFA5CS5YP



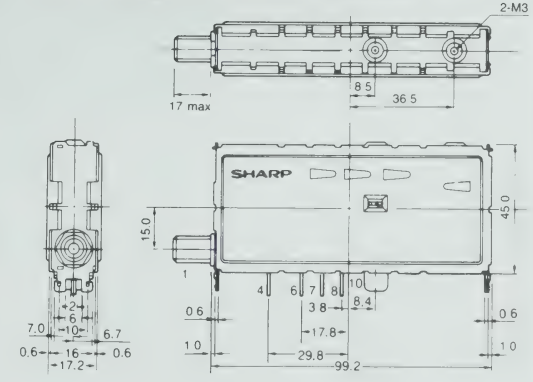
Model : BSFA5CS0SE

OUTLINE DIMENSIONS (Unit: mm)



NO	NAME	VOLT	NO	NAME	VOLT
1	RF IN	—	9	—	—
2	—	—	10	IF OUT	—
3	—	—	11	—	—
4	LNB POWER	25	12	—	—
5	AGC1	2 to 6	13	—	—
6	SUPPLY VOLTAGE	12	14	PRESCALER VOLTAGE	5
7	TUNING VOLTAGE	1.2 to 20	15	OSC	—
8	AGC2	2 to 9			

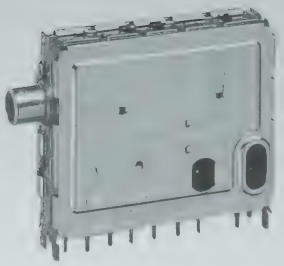
Model : BSFA5CS5YP



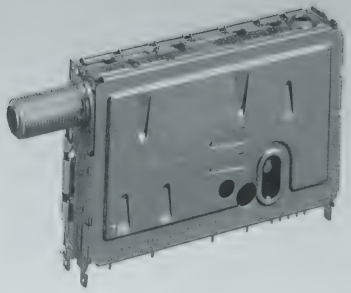
NO	NAME	VOLT	NO	NAME	VOLT
1	RF IN	—	6	SUPPLY VOLTAGE	12
2	—	—	7	TUN	0.8 to 20
3	—	—	8	AGC	1 to 5
4	LNB POWER	25	9	-	-
5		—	10	IF OUT	—

Model : BSFA5CS0SE

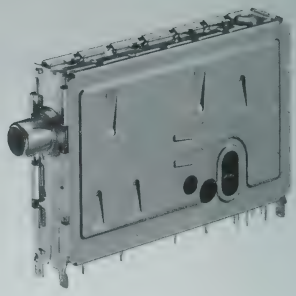
Electronic Tuner for TVs/VCRs



RCA input



F type input



With Prescaler or PLL

FEATURES

- Low-noise/low-distortion quality due to the U/V 1-chip IC integrating UHF/VHF-band oscillators, mixers, IF amplifier ...<VTSS Series>
  Cross modulation characteristics : 4dB improved in comparison with SHARP's VTSA series
  Allowable input : 10dB improved in comparison with SHARP's VTSA series
  IF rejection : 10dB improved in comparison with SHARP's VTSA series
  ※A newly developed double balanced mixer
- Best suitable for large screen TV with high quality picture
- Capable of receiving multi-channel including CATV channels
- A series of models conforming to the relevant regulations and standards of each country

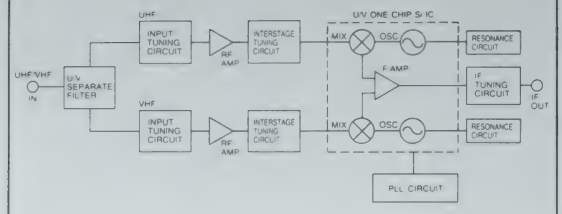
SPECIFICATIONS

Destination		U.S.A.												Europe				Germany	
Type		With PLL, conforming to the FCC (EIA/IS-31)			With PLL, conforming to the FCC (EIA/IS-31)			With PLL			With PLL ※1			Standard		Standard		Standard, conforming to the FTZ	
Model No.		VTSS6USZF			VTSS7USZF			VTSS7USZF1			VTSS6USFF			VTSS6SZ		VTSS6S1		VTSS6SZ3	
Channeles (ch)		VHF		UHF	VHF		UHF	VHF		UHF	VHF		UHF	VHF	UHF	VHF	UHF	VHF	UHF
		Air	CATV	14 to 69	Air	CATV	14 to 69	Air	CATV	14 to 69	Air	CATV	14 to 69	Air / CATV	E21 to C57	Air / CATV	E21 to C57	Air / CATV	E21 to E69
		2 to 13	A-5 to W+84 (A-8)		2 to 13	A-5 to W+84 (A-8)		2 to 13	A-5 to W+84 (A-8)		2 to 13	A-5 to W+84 (A-8)		E2 to E12 / X to S20		E2 to E12 / X to S20		E2 to E12 / X to S20	
Band split		B1 : 2 to B B2 : C to W+11 B3 : W+12 to 69			B1 : 2 to B B2 : C to W+11 B3 : W+12 to 69			B1 : 2 to B B2 : C to W+11 B3 : W+12 to 69			B1 : 2to B B2 : C to W+11 B3 : W+12 to 69			V_L : E2 to S2 V_H : S3 to S20	UHF	V_L : E2 to S2 V_H : S3 to S20	UHF	VL : E2 to S2 V_H : S3 to S20	UHF
Intermediate frequency (MHz)	Picture	45.75												38.9					
	Sound	41.25												33.4					
B voltage (V)		9			12			12			9			9		9		9	
Input impedance (Ω)		75			75			75			75			75		75		75	
V.S.W.R		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Noise figure (dB)		5	6	6	5	6	6	5	6	6	5	6	6	5	7	5	7	5	7
Power gain (dB)		35	35	35	35	35	35	35	35	35	35	35	35	35	30	35	30	30	30
Image rejection (dB)		70	65	60	70	65	60	70	65	60	70	65	60	V_L : 75 V_H : 55	50	V_L : 75 V_H : 55	50	V_L : 75 V_H : 75	50
IF rejection (dB)		90	90	85	90	90	85	90	90	85	90	90	85	V_L : 90 V_H : 100	100	V_L : 90 V_H : 100	100	V_L : 90 V_H : 100	100
Outline dimensions (mm)		70.0 × 43.0 × 13.0												54.2 × 43.0 × 13.0					

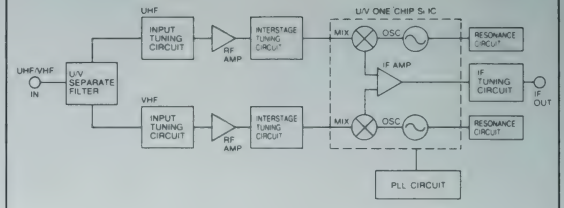
※1. Input connector : F type

Destination		U.K.			China			South Africa/ Morocco			Australia			South-east Asia			Japan				
Type		Standard			Standard			Standard			Standard			Standard			Standard			Standard	
Model No.		VTSC6BZ			VTSS60Z			VTSS601Z			VTSS6AZ			VTSC6CZ			VTSC6JGZ			VTSS6JKR	
Channels (ch)		VHF		UHF	VHF		UHF	VHF		UHF	VHF		UHF	VHF	UHF	VHF	UHF	VHF		UHF	VHF	UHF
		Air	CATV	E21 to E69	Air	CATV	C13 to C57	Air	CATV	E21 to E69	Air	CATV	A28 to A69	Air / CATV	E21 to E69	Air	CATV	13 to 62	Air	CATV	13 to 62
		–	–		C1 to C12	–		E2 to SA13	–		A0 to E12	–		1A to E12	–	1 to 12			1 to 12	C13 to C35	
Band split		–		UHF	V_L : C1 to C5 V_H : C6 to C12		UHF	V_L : E2 to E4 V_H : M4 to SA13		UHF	V_L : A0 to A5 V_H : A5A to E12		UHF	V_L : 1A to E4 V_H : E5 to E12	UHF	V_L : 1 to 3 V_H : 4 to 12		UHF	V_L : 1 to C14 V_H : C15 to C35		UHF
Intermediate frequency (MHz)	Picture	–		39.5	38.0			38.9			36.875			38.9		58.75					
	Sound	–		33.5	31.5			32.9			31.375			33.4		54.25					
B voltage (V)		–		9	9			9			9			9		9			9		
Input impedance (Ω)		–		75	75			75			75			75		75			75		
V.S.W.R		–		2	2		2	2		2	2		2	2	2	1.5		1.5	1.5		1.5
Noise figure (dB)		–		8	5		7	5		7	5		7	4	7	3.5		3.5	4		3
Power gain (dB)		–		34	35		30	35		30	35		30	37	30	36		38	36		38
Image rejection (dB)		–		50	V_L 75 V_H 55		50	V_L 75 V_H 55		50	V_L 75 V_H 55		50	V_L 75 V_H 55	50	75		60	V_L 90 V_H 75		60
IF rejection (dB)		–		70	V_L 90 V_H 100		100	V_L 90 V_H 100		100	V_L 90 V_H 100		100	V_L 80 V_H 100	100	90		90	90		90
Outline dimensions (mm)		54.2 × 43.0 × 13.0												54.2 × 43.0 × 13.0							

INTERNAL BLOCK DIAGRAM

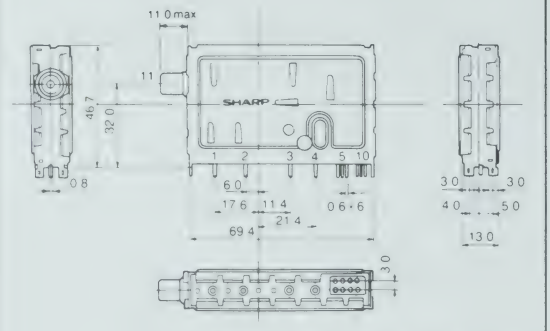


Model : VTSS6USZF/7USZF/7USZF1



Model : VTSS6USFF

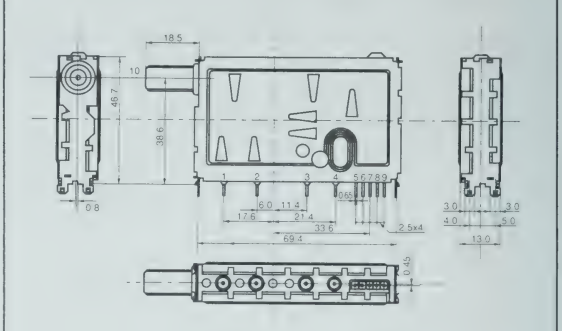
OUTLINE DIMENSIONS (Unit: mm)



NO.	NAME	VOLT.	NO.	NAME	VOLT.
1	VT	—	7	LOCK	—
2	AGC	6.3 ~ 5.1	8	CLOCK	—
3	B	9 ~ 12	9	DATA	—
4	IF OUT	—	10	ENABLE	—
5	BT	33	11	U/V IN	—
6	B+	5			

Note: ( ) VTSS7USZF • VTSS7USZF1

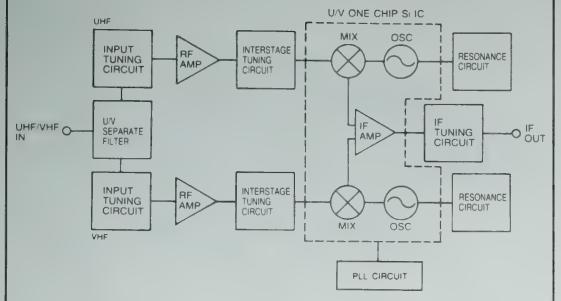
Model : VTSS6USZF/7USZF/7USZF1



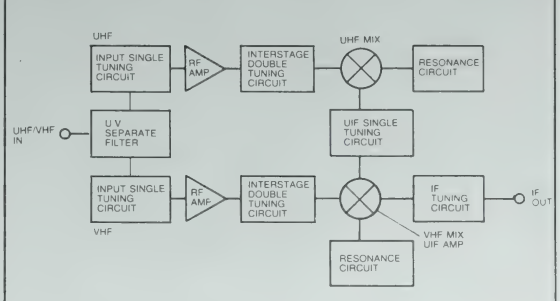
NO.	NAME	VOLT.	NO.	NAME	VOLT.
1	VT	—	6	BP	5
2	AGC	6.3	7	CLOCK	—
3	B	9	8	DATA	—
4	IF OUT	—	9	ENABLE	—
5	BT	33	10	U/V IN	—

Model : VTSS6USFF

INTERNAL BLOCK DIAGRAM

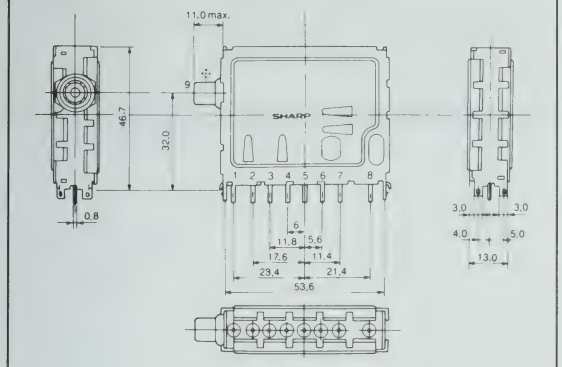


Model : VTSS6SZ/6S1/6SZ3/6OZ/6O1Z/6AZ/6CZ



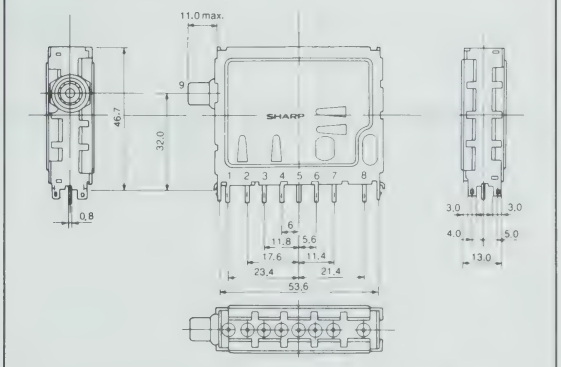
Model : VTSC6JGZ

OUTLINE DIMENSIONS (Unit: mm)



NO	NAME	VOLT	NO.	NAME	VOLT
1	BU	9	6	AFT	4.5
2	VT	1.2 to 25	7	B	9
3	BH	9	8	IF OUT	—
4	AGC	6.3	9	U/V IN	—
5	BL	9			

Model : VTSS6SZ/6S1※/6SZ3/6OZ/6O1Z/6AZ/6CZ

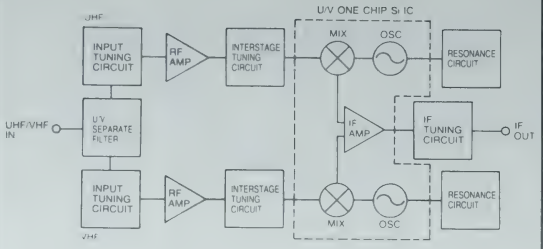


NO	NAME	VOLT	NO	NAME	VOLT
1	BU	9	6	AFT	4.5
2	VT	1.2 to 25	7	B	9
3	BH	9	8	IF OUT	—
4	AGC	6.3	9	U.V IN	—
5	BL	9			

Model : VTSC6JGZ

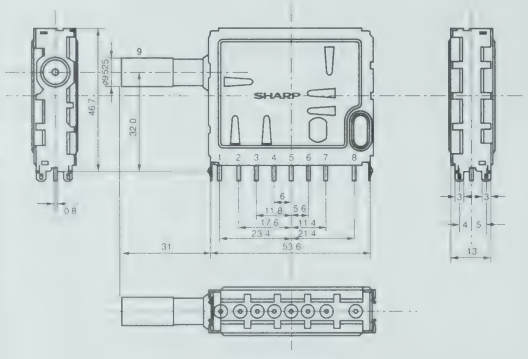
※Note : DIN jack type

INTERNAL BLOCK DIAGRAM



Model : VTSS6JKR

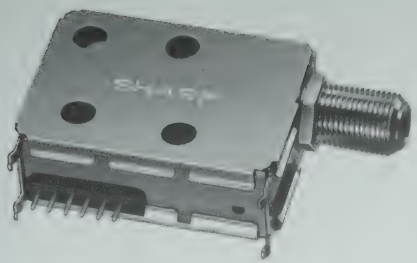
OUTLINE DIMENSIONS (Unit: mm)



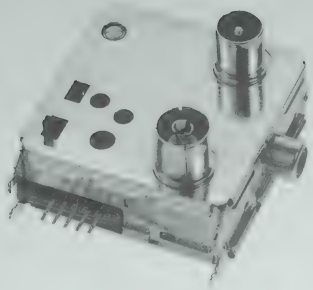
NO.	NAME	VOLT	NO.	NAME	VOLT
1	BJ	9	6	AFT	4.5
2	VT	0.6 to 24	7	B	9
3	BH	5	8	IF OUT	—
4	AGC	0.3	9	U/V IN	—
5	BL	9			

Model : VTSS6JKR

RF modulator



E6095



E1551T

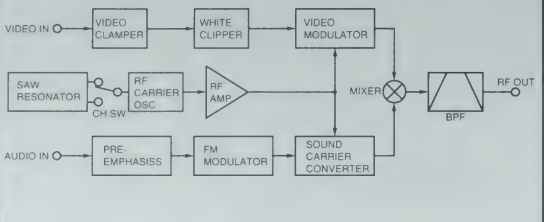
FEATURES

- Stabilized, compact, and lightweight design
- A board-in type mountable directly on the mother board of the set
- Bus noise eliminated through the use of a built-in white clip circuit
- Usable for many purposes such as BS, CATV, etc. in addition to VCR and the laser disc

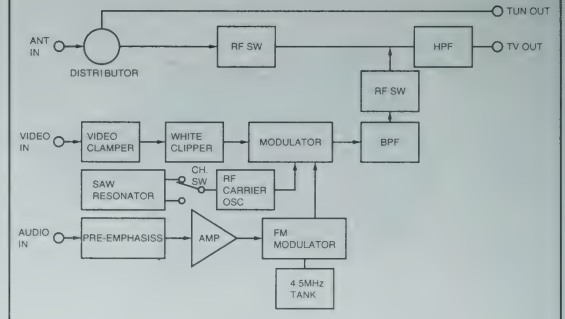
SPECIFICATIONS

Destination	U.S.A.		Germany	U.K.	Germany/E.Europe	Germany/U.K.	Hong Kong/ China	Japan	
Model	E6095	E7853	E1551T	E1552T	E1553TG	E1558T	E1559T	E6085	E7858
Supply voltage (V)	5 DC		5 DC					5 DC	
Current consumption (mA)	20 max.	35 max.	130 max.					20 max.	35 max.
Video input level (V_{P-P})	1		1					1	
Audio input level (dBs)	−12.8	−5	−5					−10.1	−5
Output channel (ch)	VHF 2, 3	VHF 3, 4	UHF 30 to 39					VHF 1, 2	
Output level (dBμ)	66 ± 3		75 ± 4					74 ± 3	
Difference in output level (f_V-f_A) (dB)	16 ± 3	16^{+4}_{-3}	16 ± 4					13 ± 3	16^{+3}_{-4}
Video modulation (%)	78 ± 7	77 ± 7	75 ± 8					78 ± 7	
Audio modulation (%)	100 ± 20		100 ± 24					80 ± 20	100 ± 20
Audio S/N (dB)	45 min.	45 min.	40 min					45 min.	
Audio distortion (%)	2.0 max.	3.0 max.	3.0 max.					3.0 max.	
Spurious signal within assigned band (dB)	−60 max.		−60 max.					−60 max.	
Other spurious output (dB)	−30 max.		−40 max.					−30 max.	
Carrier stability (kHz)	±100		±600 (25 ± 25°C)					±100	
INT-carrier accuracy (kHz)	±7		G : 5500 ± 8	I : 6000 ± 8	G : 5500 ± 8 K : 6500 ± 8	G : 5500 ± 8 I : 6000 ± 8	K : 6500 ± 8 I : 6000 ± 8	± 7	
Differential gain (%)	8 max.	10 max.	10 max.					8 max.	10 max.
Differential phase (degree)	8 max.	10 max.	10 max.					8 max.	10 max.

INTERNAL BLOCK DIAGRAM

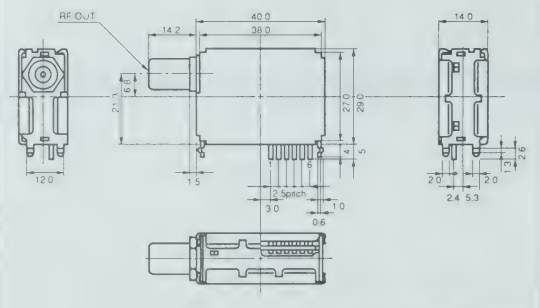


Model : E6085 / E6095



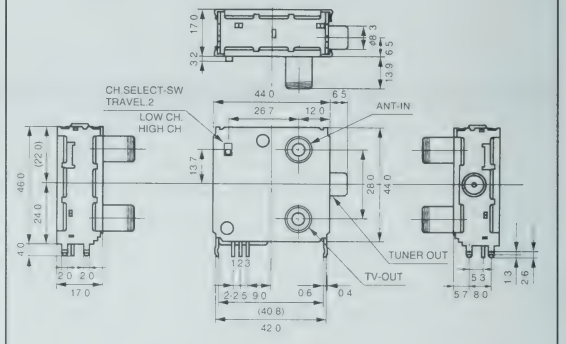
Model : E7853 / E7858

OUTLINE DIMENSIONS (Unit: mm)



NO	NAME	VOLT
1	SW	—
2	VIDEO IN	—
3	GND	—
4	+B	5V
5	GND	—
6	AUDIO IN	—

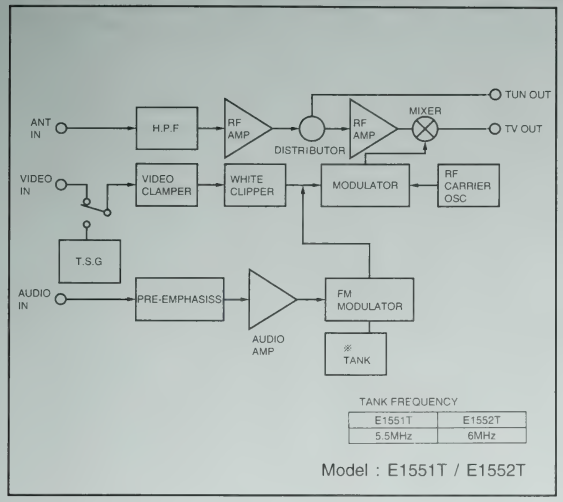
Model : E6085 / E6095



NO	NAME
1	VIDEO IN
2	AUDIO IN
3	MD + B

Model : E7853 / E7858

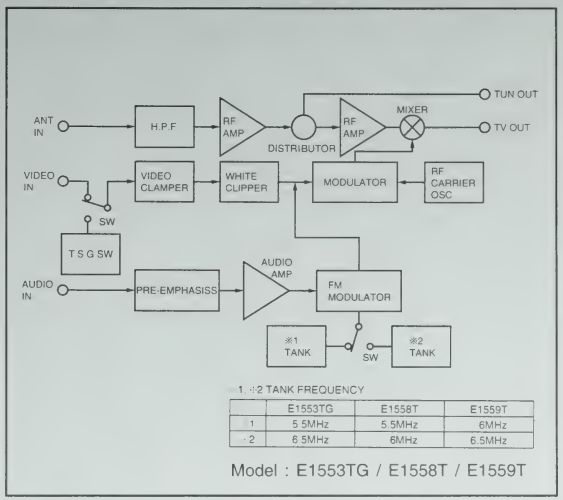
INTERNAL BLOCK DIAGRAM



TANK FREQUENCY

E1551T	E1552T
5.5MHz	6MHz

Model : E1551T / E1552T

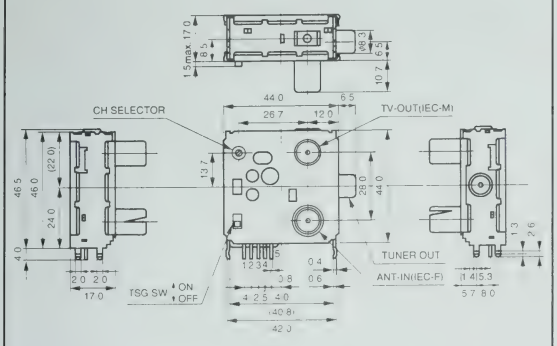


1 ,:2 TANK FREQUENCY

	E1553TG	E1558T	E1559T
1	5.5MHz	5.5MHz	6MHz
2	6.5MHz	6MHz	6.5MHz

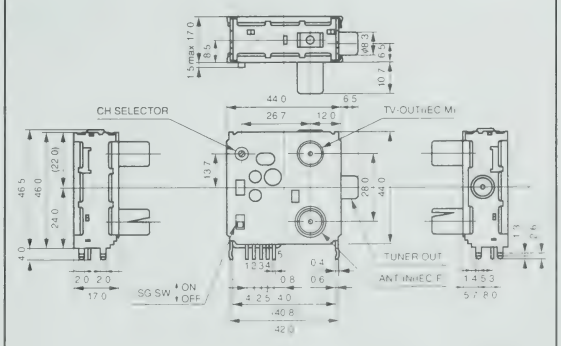
Model : E1553TG / E1558T / E1559T

OUTLINE DIMENSIONS (Unit: mm)



NO	NAME
1	VIDEO IN
2	AUDIO IN
3	MD + B
4	N.C
5	BST + B

Model : E1551T / E1552T



NO	NAME
1	VIDEO IN
2	AUDIO IN
3	MD + B
4	N.C
5	BST + B

Model : E1553TG / E1558T / E1559T

Note: <Product for BS receiver –"E16 types"–>
No-tuner-output terminal version of "E15 types" is also available.

Appendix

Satellite Receiving Systems — Page
- Outdoor Units 38
- Indoor Units 39

TV Frequency Table
- U.S.A. channel frequency assignments 40
- U.S.A. channel CATV frequency assignments 41
- C.C.I.R. channel frequency assignments 42
- C.C.I.R. channel CATV frequency assignments 43
- JAPAN channel frequency assignments 44
- JAPAN channel CATV frequency assignments 45
- CHINA channel frequency assignments 46
- Australia, South Africa and Morocco Channel frequency assignments 47

TV Broadcasting System In The World ..... 48 to 50

Satellite Receiving Systems

A satellite receiving system consists of outdoor and indoor units. Sharp supplies main components for each; those available from Sharp are shown shaded in the diagrams below. Sharp also offers technical support to users when designing system.

Outdoor Units

- Examples of Sharp's satellite receiving systems in each area.

■ Japan

Receiving system	Input frequency (GHz)	Output frequency (MHz)
DBS	11.71 to 12.01	1035 to 1335

■ Europe

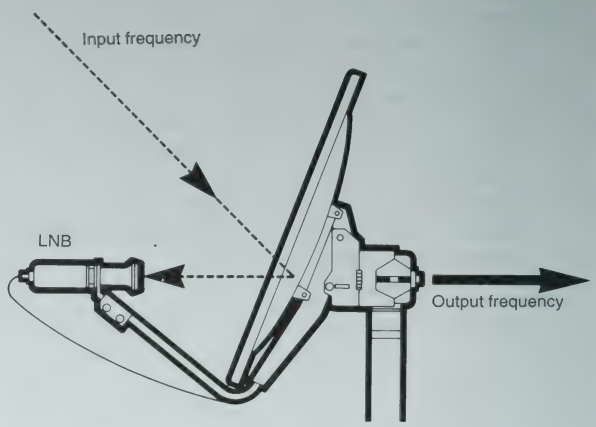
Receiving system	Input frequency (GHz)	Output frequency (MHz)
DBS	11.7 to 12.5	950 to 1750
ECS/ASTRA	10.95 to 11.7	950 to 1700
Telecom	12.5 to 12.75	1025 to 1275

■ North America

Receiving system	Input frequency (GHz)	Output frequency (MHz)
FSS	11.7 to 12.2	950 to 1450

■ Australia

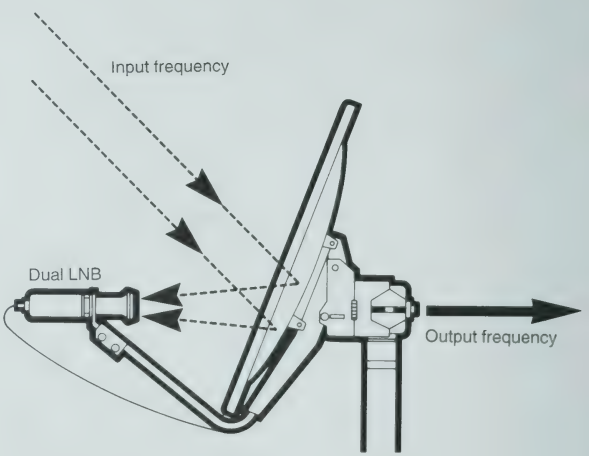
Receiving system	Input frequency (GHz)	Output frequency (MHz)
Aussat	12.25 to 12.75	950 to 1450



Dual type

■ Europe

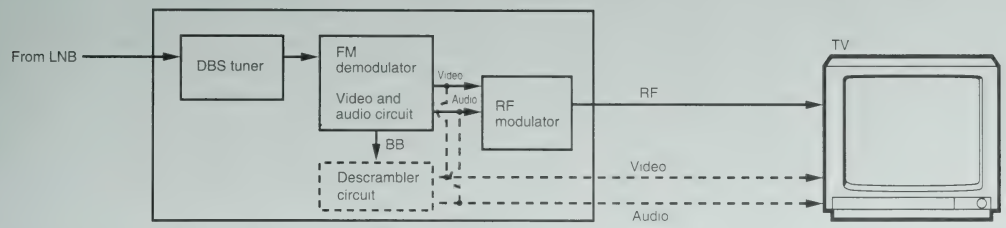
Receiving system	Input frequency (GHz)	Output frequency (MHz)
ECS + DBS	10.95 to 11.7 11.7 to 12.5	950 to 1700 950 to 1750
ECS + Telecom	10.95 to 11.7 11.945 to 12.745	950 to 1700 950 to 1750
ECS + DBS + Telecom	10.95 to 11.7 11.7 to 12.5 12.25 to 12.75	950 to 1700 950 to 1750 1750 to 2000



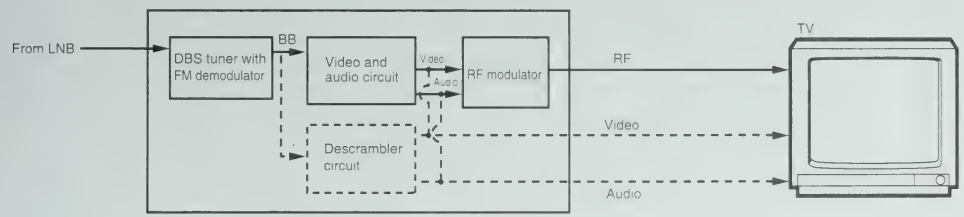
Indoor Units

*Sharp's indoor units are also compatible with the VSAT (Very Small Aperture Terminal) North America System and TVRO (Television Receive Only) System.

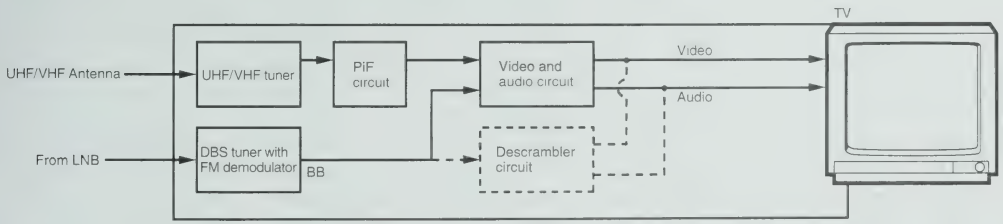
Indoor Receiver



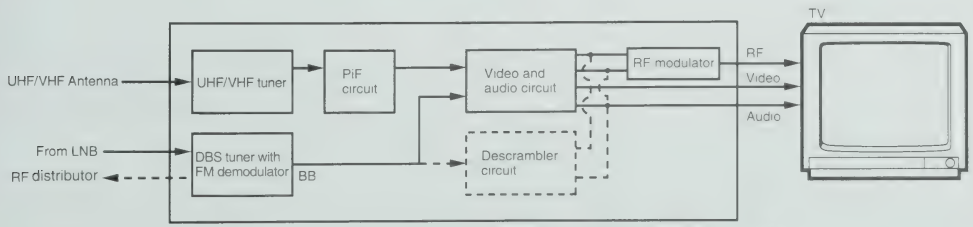
Compact-type Indoor Receiver



TV with Built-in Satellite Receiver



VCR with Built-in Satellite Receiver



Note: In North America, the VideoCipher II® is used as a descrambler circuit.
In Europe, the MAC Decoder (D-MAC, D2-MAC) is used.
VideoCipher II is a registered trademark of General Instrument Corporation.

TV Frequency Table

U.S.A. channel frequency assignments

Sound IF 41.25MHz
Picture IF 45.75MHz (Unit: MHz)

Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency	Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency
2	57	54 to 60	55.25	59.75	101	146.75	45	659	656 to 662	657.25	661.75	703	748.75
3	63	60 to 66	61.25	65.75	107	152.75	46	665	662 to 668	663.25	667.75	709	754.75
4	69	66 to 72	67.25	71.75	113	158.75	47	671	668 to 674	669.25	673.75	715	760.75
5	79	76 to 82	77.25	81.75	123	168.75	48	677	674 to 680	675.25	679.75	721	766.75
6	85	82 to 88	83.25	87.75	129	174.75	49	683	680 to 686	681.25	685.75	727	772.75
7	177	174 to 180	175.25	179.75	221	266.75	50	689	686 to 692	687.25	691.75	733	778.75
8	183	180 to 186	181.25	185.75	227	272.75	51	695	692 to 698	693.25	697.75	739	784.75
9	189	186 to 192	187.25	191.75	233	278.75	52	701	698 to 704	699.25	703.75	745	790.75
10	195	192 to 198	193.25	197.25	239	284.75	53	707	704 to 710	705.25	709.75	751	796.75
11	201	198 to 204	199.25	203.75	245	290.75	54	713	710 to 716	711.25	715.75	757	802.75
12	207	204 to 210	205.25	209.75	251	296.75	55	719	716 to 722	717.25	721.75	763	808.75
13	213	210 to 216	211.25	215.75	257	302.75	56	725	722 to 728	723.25	727.75	769	814.75
14	473	470 to 476	471.25	475.75	517	562.75	57	731	728 to 734	729.25	733.75	775	820.75
15	479	476 to 482	477.25	481.75	523	568.75	58	737	734 to 740	735.25	739.75	781	826.75
16	485	482 to 488	483.25	487.75	529	574.75	59	743	740 to 746	741.25	745.75	787	832.75
17	491	488 to 494	489.25	493.75	535	580.75	60	749	746 to 752	747.25	751.75	793	838.75
18	497	494 to 500	495.25	499.75	541	586.75	61	755	752 to 758	753.25	757.75	799	844.75
19	503	500 to 506	501.25	505.75	547	592.75	62	761	758 to 764	759.25	763.75	805	850.75
20	509	506 to 512	507.25	511.75	553	598.75	63	767	764 to 770	765.25	769.75	811	856.75
21	515	512 to 518	513.25	517.75	559	604.75	64	773	770 to 776	771.25	775.75	817	862.75
22	521	518 to 524	519.25	523.75	565	610.75	65	779	776 to 782	777.25	781.75	823	868.75
23	527	524 to 530	525.25	529.75	571	616.75	66	785	782 to 788	783.25	787.75	829	874.75
24	533	530 to 536	531.25	535.75	577	622.75	67	791	788 to 794	789.25	793.75	835	880.75
25	539	536 to 542	537.25	541.75	583	628.75	68	797	794 to 800	795.25	799.75	841	886.75
26	545	542 to 548	543.25	547.75	589	634.75	69	803	800 to 806	801.25	805.75	847	892.75
27	551	548 to 554	549.25	553.75	595	640.75	70	809	806 to 812	807.25	811.75	853	898.75
28	557	554 to 560	555.25	559.75	601	646.75	71	815	812 to 818	813.25	817.75	859	904.75
29	563	560 to 566	561.25	565.75	607	652.75	72	821	818 to 824	819.25	823.75	865	910.75
30	569	566 to 572	567.25	571.75	613	658.75	73	827	824 to 830	825.25	829.75	871	916.75
31	575	572 to 578	573.25	577.75	619	664.75	74	833	830 to 836	831.25	835.75	877	922.75
32	581	578 to 584	579.25	583.75	625	670.75	75	839	836 to 842	837.25	841.75	883	928.75
33	587	584 to 590	585.25	589.75	631	676.75	76	845	842 to 848	843.25	847.75	889	934.75
34	593	590 to 596	591.25	595.75	637	682.75	77	851	848 to 854	849.25	853.75	895	940.75
35	599	596 to 602	597.25	601.75	643	688.75	78	857	854 to 860	855.25	859.75	901	946.75
36	605	602 to 608	603.25	607.75	649	694.75	79	863	860 to 866	861.25	865.75	907	952.75
37	611	608 to 614	609.25	613.75	655	700.75	80	869	866 to 872	866.25	871.75	913	958.75
38	617	614 to 620	615.25	619.75	661	706.75	81	875	872 to 878	873.25	877.75	919	964.75
39	623	620 to 626	621.25	625.75	667	712.75	82	881	878 to 884	879.25	883.75	925	970.75
40	629	626 to 632	627.25	631.75	673	718.75	83	887	884 to 890	885.25	889.75	931	976.75
41	635	632 to 638	633.25	637.75	679	724.75							
42	641	638 to 644	639.25	643.75	685	730.75							
43	647	644 to 650	645.25	649.75	691	736.75							
44	653	650 to 656	651.25	655.75	697	742.75							

TV Frequency Table

U.S.A. channel CATV frequency assignments

Sound IF 41.25MHz
Picture IF 45.75MHz (Unit: MHz)

Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency	Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency
2	57	54 to 60	55.25	59.75	101	146.75	S	273	270 to 276	271.25	275.75	317	362.75
3	63	60 to 66	61.25	65.75	107	152.75	T	279	276 to 282	277.25	281.75	323	368.75
4	69	66 to 72	67.25	71.75	113	158.75	U	285	282 to 288	283.25	287.75	329	374.75
A8	73.75	70.75 to 76.75	72.00	76.50	117.75	163.5	V	291	288 to 294	289.25	293.75	335	380.75
5	79	76 to 82	77.25	81.75	123	168.75	W	297	294 to 300	295.25	299.75	341	386.75
6	85	82 to 88	83.25	87.75	129	174.75	W + 1	303	300 to 306	301.25	305.75	347	392.75
A-6	87	84 to 90	85.25	89.75	131	176.75	W + 2	309	306 to 312	307.25	311.75	353	398.75
A-5	93	90 to 96	91.25	95.75	137	182.75	W + 3	315	312 to 318	313.25	317.75	359	404.75
A-4	99	96 to 102	97.25	101.75	143	188.75	W + 4	321	318 to 324	319.25	323.75	365	410.75
A-3	105	102 to 108	103.25	107.75	149	194.75	W + 5	327	324 to 330	325.25	329.75	371	416.75
A-2	111	108 to 114	109.25	113.75	155	200.75	W + 6	333	330 to 336	331.25	335.75	377	422.75
A-1	117	114 to 120	115.25	119.75	161	206.75	W + 7	339	336 to 342	337.25	341.75	383	428.75
A	123	120 to 126	121.25	125.75	167	212.75	W + 8	345	342 to 348	343.25	347.75	389	434.75
B	129	126 to 132	127.25	131.75	173	218.75	W + 9	351	348 to 354	349.25	353.75	395	440.75
C	135	132 to 138	133.25	137.75	179	224.75	W + 10	357	354 to 360	355.25	359.75	401	446.75
D	141	138 to 144	139.25	143.75	185	230.75	W + 11	363	360 to 366	361.25	365.75	407	452.75
E	147	144 to 150	145.25	149.75	191	236.75	W + 12	369	366 to 372	367.25	371.75	413	458.75
F	153	150 to 156	151.25	155.75	197	242.75	W + 13	375	372 to 378	373.25	377.75	419	464.75
G	159	156 to 162	157.25	161.75	203	248.75	W + 14	381	378 to 384	379.25	383.75	425	470.75
H	165	162 to 168	163.25	167.75	209	254.75	W + 15	387	384 to 390	385.25	389.75	431	476.75
I	171	168 to 174	169.25	173.75	215	260.75	W + 16	393	390 to 396	391.25	395.75	437	482.75
7	177	174 to 180	175.25	179.75	221	266.75	W + 17	399	396 to 402	397.25	401.75	443	488.75
8	183	180 to 186	181.25	185.75	227	272.75	W + 18	405	402 to 408	403.25	407.75	449	494.75
9	189	186 to 192	187.25	191.75	233	278.75	W + 19	411	408 to 414	409.25	413.75	455	500.75
10	195	192 to 198	193.25	197.75	239	284.75	W + 20	417	414 to 420	415.25	419.75	461	506.75
11	201	198 to 204	199.25	203.75	245	290.75	W + 21	423	420 to 426	421.25	425.75	467	512.75
12	207	204 to 210	205.25	209.75	251	296.75	W + 22	429	426 to 432	427.25	431.75	473	518.75
13	213	210 to 216	211.25	215.75	257	302.75	W + 23	435	432 to 438	433.25	437.75	479	524.75
J	219	216 to 222	217.25	221.75	263	308.75	W + 24	441	438 to 444	439.25	443.75	485	530.75
K	225	222 to 228	223.25	227.75	269	314.75	W + 25	447	444 to 450	445.25	449.75	491	536.75
L	231	228 to 234	229.25	233.75	275	320.75	W + 26	453	450 to 456	451.25	455.75	497	542.75
M	237	234 to 240	235.25	239.75	281	326.75	W + 27	459	456 to 462	457.25	461.75	503	548.75
N	243	240 to 246	241.25	245.75	287	332.75	W + 28	465	462 to 468	463.25	467.75	509	554.75
O	249	246 to 252	247.25	251.75	293	338.75	W + 29	471	468 to 474	469.25	473.75	515	560.75
P	255	252 to 258	253.25	257.75	299	344.75	↓	↓	↓	↓	↓	↓	↓
Q	261	258 to 264	259.25	263.75	305	350.75	W + 98	885	882 to 888	883.25	887.75	929	974.75
R	267	264 to 270	265.25	269.75	311	356.75							

* CATV channel (W + 29 to W + 98) consists of 70 channels in number which are divided by 6MHz.

TV Frequency Table

C.C.I.R. channel frequency assignments

Sound IF 33.4MHz
Picture IF 38.9MHz (Unit: MHz)

Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency	Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency
E2	50.5	47 to 54	48.25	53.75	87.15	126.05	E58	770	766 to 774	767.25	772.75	806.15	845.05
E3	57.5	54 to 61	55.25	60.75	94.15	133.05	E59	778	774 to 782	775.25	780.75	814.15	853.05
E4	64.5	61 to 68	62.25	67.75	101.15	140.05	E60	786	782 to 790	783.25	788.75	822.15	861.05
E5	177.5	174 to 181	175.25	180.75	214.15	253.05	E61	794	790 to 798	791.25	796.75	830.15	869.05
E6	184.5	181 to 188	182.25	187.75	221.15	260.05	E62	802	798 to 806	799.25	804.75	838.15	877.05
E7	191.5	188 to 195	189.25	194.75	228.15	267.05	E63	810	806 to 814	807.25	812.75	846.15	885.05
E8	198.5	195 to 202	196.25	201.75	235.15	274.05	E64	818	814 to 822	815.25	820.75	854.15	893.05
E9	205.5	202 to 209	203.25	208.75	242.15	281.05	E65	826	822 to 830	823.25	828.75	862.15	901.05
E10	212.5	209 to 216	210.25	215.75	249.15	288.05	E66	834	830 to 838	831.25	836.75	870.15	909.05
E11	219.5	216 to 223	217.25	222.75	256.15	295.05	E67	842	838 to 846	839.25	844.75	878.15	917.05
E12	226.5	223 to 230	224.25	229.75	263.15	302.05	E68	850	846 to 854	847.25	852.75	886.15	925.05
E21	474	470 to 478	471.25	476.75	510.15	549.05	E69	858	854 to 862	855.25	860.75	894.15	933.05
E22	482	478 to 486	479.25	484.75	518.15	557.05							
E23	490	486 to 494	487.25	492.75	526.15	565.05							
E24	498	494 to 502	495.25	500.75	534.15	573.05							
E25	506	502 to 510	503.25	508.75	542.15	581.05							
E26	514	510 to 518	511.25	516.75	550.15	589.05							
E27	522	518 to 526	519.25	524.75	558.15	597.05							
E28	530	526 to 534	527.25	532.75	566.15	605.05							
E29	538	534 to 542	535.25	540.75	574.15	613.05							
E30	546	542 to 550	543.25	548.75	582.15	621.05							
E31	554	550 to 558	551.25	556.75	590.15	629.05							
E32	562	558 to 566	559.25	564.75	598.15	637.05							
E33	570	566 to 574	567.25	572.75	606.15	645.05							
E34	578	574 to 582	575.25	580.75	614.15	653.05							
E35	586	582 to 590	583.25	588.75	622.15	661.05							
E36	594	590 to 598	591.25	596.75	630.15	669.05							
E37	602	598 to 606	599.25	604.75	638.15	677.05							
E38	610	606 to 614	607.25	612.75	646.15	685.05							
E39	618	614 to 622	615.25	620.75	654.15	693.05							
E40	626	622 to 630	623.25	628.75	662.15	701.05							
E41	634	630 to 638	631.25	636.75	670.15	709.05							
E42	642	638 to 646	639.25	644.75	678.15	717.05							
E43	650	646 to 654	647.25	652.75	686.15	725.05							
E44	658	654 to 662	655.25	660.75	694.15	733.05							
E45	666	662 to 670	663.25	668.75	702.15	741.05							
E46	674	670 to 678	671.25	676.75	710.15	749.05							
E47	682	678 to 686	679.25	684.75	718.15	757.05							
E48	690	686 to 694	687.25	692.75	726.15	765.05							
E49	698	694 to 702	695.25	700.75	734.15	773.05							
E50	706	702 to 710	703.25	708.25	742.15	781.05							
E51	714	710 to 718	711.25	716.75	750.15	789.05							
E52	722	718 to 726	719.25	724.75	758.15	797.05							
E53	730	726 to 734	727.25	732.75	766.15	805.05							
E54	738	734 to 742	735.25	740.75	774.15	813.05							
E55	746	742 to 750	743.25	748.75	782.15	821.05							
E56	754	750 to 758	751.25	756.75	790.15	829.05							
E57	762	758 to 766	759.25	764.75	798.15	837.05							

TV Frequency Table

C.C.I.R. channel CATV frequency assignments

Sound IF 33.4
Picture IF 38.9MHz (Unit: MHz)

Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency	Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency
E2	50.5	47 to 54	48.25	53.75	87.15	126.05	E5	177.5	174 to 181	175.25	180.75	214.15	253.05
E3	57.5	54 to 61	55.25	60.75	94.15	133.05	E6	184.5	181 to 188	182.25	187.75	221.15	260.05
E4	64.5	61 to 68	62.25	67.75	101.15	140.05	E7	191.5	188 to 195	189.25	194.75	228.15	267.05
X	71.5	68 to 25	69.25	74.75	108.15	147.05	E8	198.5	195 to 202	196.25	201.75	235.15	274.05
Y	78.5	75 to 82	76.25	81.75	115.15	154.05	E9	205.5	202 to 209	203.25	208.75	242.15	281.05
Z	85.5	82 to 89	83.25	88.75	122.15	161.05	E10	212.5	209 to 216	210.25	215.75	249.15	288.05
Z + 1	92.5	89 to 96	90.25	95.75	129.15	168.05	E11	219.5	216 to 223	217.25	222.75	256.15	295.05
Z + 2	99.5	96 to 103	97.25	102.75	136.15	175.05	E12	226.5	223 to 230	224.25	229.75	263.15	302.05
S1	107.5	104 to 111	105.25	110.75	144.15	183.05	S11	233.5	230 to 237	231.25	236.75	270.15	309.05
S2	114.5	111 to 118	112.25	117.75	151.15	190.05	S12	240.5	237 to 244	238.25	243.75	277.15	316.05
S3	121.5	118 to 125	119.25	124.75	158.15	197.05	S13	247.5	244 to 251	245.25	250.75	284.15	323.05
S4	128.5	125 to 132	126.25	131.75	165.15	204.05	S14	254.5	251 to 258	252.25	257.75	291.15	330.05
S5	135.5	132 to 139	133.25	138.75	172.15	211.05	S15	261.5	258 to 265	259.25	264.75	298.15	337.05
S6	142.5	139 to 146	140.25	145.75	179.15	218.05	S16	268.5	265 to 272	266.25	271.75	305.15	344.05
S7	149.5	146 to 153	147.25	152.75	186.15	225.05	S17	275.5	272 to 279	273.75	278.75	312.15	351.05
S8	156.5	153 to 160	154.25	159.75	193.15	232.05	S18	282.5	279 to 286	280.25	285.75	319.15	358.05
S9	163.5	160 to 167	161.25	166.75	200.15	239.05	S19	289.5	286 to 293	287.25	292.75	326.15	365.05
S10	170.5	167 to 174	168.25	173.75	207.15	246.05	S20	296.5	293 to 300	294.25	299.75	333.15	372.05

TV Frequency Table

JAPAN channel frequency assignments

Sound IF 54.25MHz
Picture IF 58.75MHz (Unit: MHz)

Channel No	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L O frequency	Image frequency	Channel No	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L O frequency	Image frequency
1	93	90 to 96	91.25	95.75	150	208.75	44	659	656 to 662	657.25	661.75	716	774.75
2	99	96 to 102	97.25	101.75	156	214.75	45	665	662 to 668	663.25	667.75	722	780.75
3	105	102 to 108	103.25	107.75	162	220.75	46	671	668 to 674	669.25	673.75	728	786.75
4	173	170 to 176	171.25	175.75	230	288.75	47	677	674 to 680	675.25	679.75	734	792.75
5	179	176 to 182	177.25	181.75	236	294.75	48	683	680 to 686	681.25	685.75	740	798.75
6	185	182 to 188	183.25	187.75	242	300.75	49	689	686 to 692	687.25	691.75	746	804.75
7	191	188 to 194	189.25	193.75	248	306.75	50	695	692 to 698	693.25	697.75	752	810.75
8	195	192 to 198	193.25	197.75	252	310.75	51	701	698 to 704	699.25	703.75	758	816.75
9	201	198 to 204	199.25	203.75	258	316.75	52	707	704 to 710	705.25	709.75	764	822.75
10	207	204 to 210	205.25	209.75	264	322.75	53	713	710 to 716	711.25	715.75	770	828.75
11	213	210 to 216	211.25	215.75	270	328.75	54	719	716 to 722	717.25	721.75	776	834.75
12	219	216 to 222	217.25	221.75	276	334.75	55	725	722 to 728	723.25	727.75	782	840.75
13	473	470 to 476	471.25	475.75	530	588.75	56	731	728 to 734	729.25	733.75	788	846.75
14	479	476 to 482	477.25	481.75	536	594.75	57	737	734 to 740	735.25	739.75	794	852.75
15	485	482 to 488	483.25	487.75	542	600.75	58	743	740 to 746	741.25	745.75	880	858.75
16	491	488 to 494	489.25	493.75	548	606.75	59	749	746 to 752	747.25	751.75	806	864.75
17	497	494 to 500	495.25	499.75	554	612.75	60	755	752 to 758	753.25	757.75	812	870.75
18	503	500 to 506	501.25	505.75	560	618.75	61	761	758 to 764	759.25	763.75	818	876.75
19	509	506 to 512	507.25	511.75	566	624.75	62	767	764 to 770	765.25	769.75	824	882.75
20	515	512 to 518	513.25	517.75	572	630.75							
21	521	518 to 524	519.25	523.75	578	636.75							
22	527	524 to 530	525.25	529.75	584	642.75							
23	533	530 to 536	531.25	535.75	590	648.75							
24	539	536 to 542	537.25	541.75	596	654.75							
25	545	542 to 548	543.25	547.75	602	660.75							
26	551	548 to 554	549.25	553.75	608	666.75							
27	557	554 to 560	555.25	559.75	614	672.75							
28	563	560 to 566	561.25	565.75	620	678.75							
29	569	566 to 572	567.25	571.75	626	684.75							
30	575	572 to 578	573.25	577.75	632	690.75							
31	581	578 to 584	579.25	583.75	638	696.75							
32	587	584 to 590	585.25	589.75	644	702.75							
33	593	590 to 596	591.25	595.75	650	708.75							
34	599	596 to 602	597.25	601.75	656	714.75							
35	605	602 to 608	603.25	607.75	662	720.75							
36	611	608 to 614	609.25	613.75	668	726.75							
37	617	614 to 620	615.25	619.75	674	732.75							
38	623	620 to 626	621.25	625.75	680	738.75							
39	629	626 to 632	627.25	631.75	686	744.75							
40	635	632 to 638	633.25	637.75	692	750.75							
41	641	638 to 644	639.25	643.75	698	756.75							
42	647	644 to 650	645.25	649.75	704	762.75							
43	653	650 to 656	651.25	655.75	710	768.75							

TV Frequency Table

JAPAN channel CATV frequency assignments

Sound IF 54.25MHz
Picture IF 58.75MHz (Unit: MHz)

Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency	Channel No.	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L.O. frequency	Image frequency
1	93	90 to 96	91.25	95.75	150	208.75	C44	351	348 to 354	349.25	353.75	408	466.75
2	99	96 to 102	97.25	101.75	156	214.75	C45	357	354 to 360	355.25	359.75	414	472.75
3	105	102 to 108	103.25	107.75	162	220.75	C46	363	360 to 366	361.25	365.75	420	478.75
C13	111	108 to 114	109.25	113.75	168	226.75	C47	369	366 to 372	367.25	371.75	426	484.75
C14	117	114 to 120	115.25	119.75	174	232.75	C48	375	372 to 378	373.25	377.75	432	490.75
C15	123	120 to 126	121.25	125.75	180	238.75	C49	381	378 to 384	379.25	383.75	438	496.75
C16	129	126 to 132	127.25	131.75	186	244.75	C50	387	384 to 390	385.25	389.75	444	502.75
C17	135	132 to 138	133.25	137.75	192	250.75	C51	393	390 to 396	391.25	395.75	450	508.75
C18	141	138 to 144	139.25	143.75	198	256.75	C52	399	396 to 402	397.25	401.75	456	514.75
C19	147	144 to 150	145.25	149.75	204	262.75	C53	405	402 to 408	403.25	407.75	462	520.75
C20	153	150 to 156	151.25	155.75	210	268.75	C54	411	408 to 414	409.25	413.75	468	526.75
C21	159	156 to 162	157.25	161.75	216	274.75	C55	417	414 to 420	415.25	419.75	474	532.75
C22	167	164 to 170	165.25	169.75	224	282.75	C56	423	420 to 426	421.25	425.75	480	538.75
4	173	170 to 176	171.25	175.75	230	288.75	C57	429	426 to 432	427.25	431.75	486	544.75
5	179	176 to 182	177.25	181.75	236	294.75	C58	435	432 to 438	433.25	437.75	492	550.75
6	185	182 to 188	183.25	187.75	242	300.75	C59	441	438 to 444	439.25	443.75	498	556.75
7	191	188 to 194	189.25	193.75	248	306.75	C60	447	444 to 450	445.25	449.75	504	562.75
8	195	192 to 198	193.25	197.75	252	310.75	C61	453	450 to 456	451.25	455.75	510	568.75
9	201	198 to 204	199.25	203.75	258	316.75	C62	459	456 to 462	457.25	461.75	516	574.75
10	207	204 to 210	205.25	209.75	264	322.75	C63	465	462 to 468	463.25	467.75	522	580.75
11	213	210 to 216	211.25	215.75	270	328.75							
12	219	216 to 222	217.25	221.75	276	334.75							
C23	225	222 to 228	223.25	227.75	282	340.75							
C24	233	230 to 236	231.25	235.75	290	348.75							
C25	239	236 to 242	237.25	241.75	296	354.75							
C26	245	242 to 248	243.25	247.75	302	360.75							
C27	251	248 to 254	249.25	253.75	308	366.75							
C28	255	252 to 258	253.25	257.75	312	370.75							
C29	261	258 to 264	259.25	263.75	318	376.75							
C30	267	264 to 270	265.25	269.75	324	382.75							
C31	273	270 to 276	271.25	275.75	330	388.75							
C32	279	276 to 282	277.25	281.75	336	394.75							
C33	285	282 to 288	283.25	287.75	342	400.75							
C34	291	288 to 294	289.25	293.75	348	406.75							
C35	297	294 to 300	295.25	299.75	354	412.75							
C36	303	300 to 306	301.25	305.75	360	418.75							
C37	309	306 to 312	307.25	311.75	366	424.75							
C38	315	312 to 318	313.25	317.75	372	430.75							
C39	321	318 to 324	319.25	323.75	378	436.75							
C40	327	324 to 330	325.25	329.75	384	442.75							
C41	333	330 to 336	331.25	335.75	390	448.75							
C42	339	336 to 342	337.25	341.75	396	454.75							
C43	345	342 to 348	343.25	347.75	402	460.75							

TV Frequency Table

CHINA channel frequency assignments

Sound IF 31.5MHz
Picture IF 38.0MHz (Unit: MHz)

Channel No	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L O frequency	Image frequency	Channel No	Center frequency	Frequency range	f_P (picture)	f_S (sound)	L O frequency	Image frequency
C1	52.5	48.5 to 56.5	49.75	56.25	87.75	125.75	C44	762	758 to 766	759.25	765.75	797.25	835.25
C2	60.5	56.5 to 64.5	57.75	64.25	95.75	133.75	C45	770	766 to 774	767.25	773.75	805.25	843.25
C3	68.5	64.5 to 72.5	65.75	72.25	103.75	141.75	C46	778	774 to 782	775.25	781.75	813.25	851.25
C4	80	76 to 84	77.25	83.75	115.25	153.25	C47	786	782 to 790	783.25	789.75	821.25	859.25
C5	88	84 to 92	85.25	91.75	123.25	161.25	C48	794	790 to 798	791.25	797.75	829.25	867.25
C6	171	167 to 175	168.25	174.75	206.25	244.25	C49	802	798 to 806	799.25	805.75	837.25	875.25
C7	179	175 to 183	176.25	182.75	214.25	252.25	C50	810	806 to 814	807.25	813.75	845.25	883.25
C8	187	183 to 191	184.25	190.75	222.25	260.25	C51	818	814 to 822	815.25	821.75	853.25	891.25
C9	195	191 to 199	192.25	198.75	230.25	268.25	C52	826	822 to 830	823.25	829.75	861.25	899.25
C10	203	199 to 207	200.25	206.75	238.25	276.25	C53	834	830 to 838	831.25	837.75	869.25	907.25
C11	211	207 to 215	208.25	214.75	246.25	284.25	C54	842	838 to 846	839.25	845.75	877.25	915.25
C12	219	215 to 223	216.25	222.75	254.25	292.25	C55	850	846 to 854	847.25	853.75	885.25	923.25
C13	474	470 to 478	471.25	477.75	509.25	545.25	C56	858	854 to 862	855.25	861.75	893.25	931.25
C14	482	478 to 486	479.25	485.75	517.25	555.25	C57	866	862 to 870	863.25	869.75	901.25	939.25
C15	490	486 to 494	487.25	493.75	525.25	563.25							
C16	498	494 to 502	493.25	501.75	533.25	571.25							
C17	506	502 to 510	503.25	509.75	541.25	579.25							
C18	514	510 to 518	511.25	517.75	549.25	587.25							
C19	522	518 to 526	519.25	525.75	557.25	595.25							
C20	530	526 to 534	527.25	533.75	565.25	603.25							
C21	538	534 to 542	535.25	541.75	573.25	611.25							
C22	546	542 to 550	543.25	549.75	581.25	619.25							
C23	554	550 to 558	551.25	557.75	589.25	627.25							
C24	562	558 to 566	559.25	565.75	597.25	635.25							
C25	610	606 to 614	607.25	613.75	645.25	683.25							
C26	618	614 to 622	615.25	621.75	653.25	671.25							
C27	626	622 to 630	623.25	629.75	661.25	699.25							
C28	634	630 to 638	631.25	637.75	669.25	707.25							
C29	642	638 to 646	639.25	645.75	677.25	715.25							
C30	650	646 to 654	647.25	653.75	685.25	723.25							
C31	658	654 to 662	655.25	661.75	693.25	731.25							
C32	666	662 to 670	663.25	669.75	701.25	739.25							
C33	674	670 to 678	671.25	677.75	709.25	747.25							
C34	682	678 to 686	679.25	685.25	717.25	755.25							
C35	690	686 to 694	687.25	693.75	725.25	763.25							
C36	698	694 to 702	695.25	701.75	733.25	771.25							
C37	706	702 to 710	703.25	709.25	741.25	779.25							
C38	714	710 to 718	711.25	717.75	749.25	787.25							
C39	722	718 to 726	719.25	725.75	757.25	795.25							
C40	730	726 to 734	727.25	733.75	765.25	803.25							
C41	738	734 to 742	735.25	741.75	773.25	811.25							
C42	746	742 to 750	743.25	749.75	781.25	819.25							
C43	754	750 to 758	751.25	757.75	789.25	827.25							

TV Frequency Table

Unit : MHz

Australia ch.

Channel No.	f_P (picture)	f_S (sound)	L.O frequency	Channel No.	f_P (picture)	f_S (sound)	L.O frequency
IF	36.875	31.375	—	5A	138.25	143.75	175.125
A0	46.25	51.75	83.125	A6	175.25	180.75	212.125
A1	57.25	62.75	94.125	A7	182.25	187.75	219.125
A2	64.25	69.75	101.125	A8	189.25	194.75	226.125
A3	86.25	91.75	123.125	A9	196.25	201.75	233.125
A4	95.25	100.75	132.125	A10	209.25	214.75	246.125
A5	102.25	107.75	139.125	A11	216.25	221.75	253.125

South Africa ch.

Channel No.	f_P (picture)	f_S (sound)	L.O frequency	Channel No.	f_P (picture)	f_S (sound)	L.O frequency
IF	38.9	32.9	—	A9	215.25	221.25	254.15
A4	175.25	181.25	214.15	A10	223.25	229.25	262.15
A5	183.25	189.25	222.15	A11	231.25	237.25	270.15
A6	191.25	197.25	230.15	A12	—	—	—
A7	199.25	205.25	238.15	A13	247.43	253.43	286.33
A8	207.25	213.25	246.15				

Morocco ch.

Channel No.	f_P (picture)	f_S (sound)	L.O frequency	Channel No.	f_P (picture)	f_S (sound)	L.O frequeny
IF	38.9	33.4	—	M10	211.25	216.73	250.150
M4	163.25	168.75	202.150	(E2)	48.25	53.75	87.15
M5	171.25	176.75	210.150	(E4)	62.25	67.75	101.15
M6	179.25	184.75	218.150	(E5)	175.25	180.75	214.15
M7	187.25	192.75	226.150	(E8)	196.25	201.75	235.15
M8	195.25	200.75	234.150	(E12)	224.25	229.75	263.15
M9	203.25	208.75	242.150				

TV Broadcasting System In The World

COUNTRY	T.V. TRANSMISSION SYSTEM				COUNTRY	T.V. TRANSMISSION SYSTEM			
	VHF	UHF	COLOUR	CHANNEL		VHF	UHF	COLOUR	CHANNEL
Afghanistan	B		PAL/SECAM	CCIR	Gabon	K1	K1*	SECAM	OIRT
Albania	D		SECAM	OIRT	Gambia	I	I*		BRITISH
Algeria	B	G*	PAL	CCIR	(German Dem. Rep.)	B	G	SECAM	CCIR
Andorra	E	L		FRENCH	Germany (Fed. Rep. of)	B	G	PAL	CCIR
Angola	I	I*	PAL	BRITISH	Ghana	B	G*	PAL	CCIR
Argentina	N	N*	PAL	U.S.	Gibraltar	B	G	PAL	CCIR
Australia	B	G	PAL	AUSTRALIA	Greece	B	G*	SECAM	CCIR
Austria	B	G	PAL	CCIR	Greenland	B		PAL	CCIR
Azores	M	M	PAL	CCIR	Guadeloupe	K1	K1*	SECAM	OIRT
Bahamas	M		NTSC	U.S.	Guam	M	M*	NTSC	U.S.
Bahrain	B		PAL	CCIR	Guatemala	M	M*	NTSC	U.S.
Bangladesh	B			CCIR	Guinea	K1	K1*	SECAM	OIRT
Bardados	M		NTSC	U.S.	Guinea-Bissau				
Belgium	B	H	PAL	CCIR	Guiana (French)	K1	K1*	SECAM	OIRT
Benin	K1	K1*	SECAM	OIRT	Haïti	M		NTSC	U.S.
Bermuda	M		NTSC	U.S.	Hawaii	M		NTSC	U.S.
Bolivia	N/M	N*/M	NTSC	U.S.	Honduras	M		NTSC	U.S.
Botswana	I	I*	PAL	BRITISH	Hong Kong		I	PAL	BRITISH
Brazil	M	M*	PAL	U.S.	Hungary	D	K*	SECAM	OIRT
Bulgaria	D	K*	SECAM	OIRT	Iceland	B	G	PAL	CCIR
Burundi	K1	K1*		OIRT	India	B	G*	PAL	CCIR
Cambodia	M				Indonesia	B		PAL	INDONESIA
Cameroon	K1	K1*	PAL	OIRT	Iran	B		SECAM	CCIR
Canada	M	M	NTSC	U.S.	Iraq	B		SECAM	CCIR
Canarias Islands	B	G*	PAL	CCIR	Ireland	I,[A**]	I	PAL	IRELAND
Centr. African Rep.	K1	K1*		OIRT	Italy	B	G	PAL	ITALY
Chad	K1	K1*		OIRT	Ivory Coast	K1	K1*	SECAM	IVORY COAST
Chile	M		NTSC	U.S.	Jamaica	M		NTSC	U.S.
China (People's Rep. of)	D		PAL	CHINA	Japan	M	M	NTSC	JAPAN
Colombia	M	M*	NTSC	U.S.	Jordan	B	G	PAL	CCIR
Congo (Rep. of)	D	K1*	SECAM	OIRT	Kenya	B	G*	PAL	CCIR
Costa Rica	M	M*	NTSC	U.S.	North Korea	D		PAL	OIRT
Cuba	M	M	NTSC	U.S.	South Korea	M	M	NTSC	U.S.
Cyprus	B	G*	SECAM	CCIR	Kuwait	B	G*	PAL	CCIR
Czechoslovakia	D	K	SECAM	OIRT	Laos	M	M	PAL	CCIR
Denmark	B	G	PAL	CCIR	Lebanon	B	G	SECAM	CCIR
Dominican Rep.	M	M	NTSC	U.S.	Leeward Islands (Antigua)	M			U.S.
Ecuador	M	M*	NTSC	U.S.	Liberia	B	H*	PAL	CCIR
Egypt	B	G*	SECAM	CCIR	Libya	B	G*	SECAM	CCIR
El Salvador	M	M*	NTSC	U.S.	Luxembourg	B	L/G	SECAM/PAL	BELGIAN
Ethiopia	B	G*		CCIR	Macao	I	I	PAL	BRITISH
Fiji	K1	K1*	SECAM	OIRT	Madagascar	K1	K	SECAM	OIRT
Finland	B	G	PAL	CCIR	Madeira	B			CCIR
France	L	L	SECAM	FRENCH	Majorca Islands	B	G		CCIR

TV Broadcasting System In The World

COUNTRY	T.V. TRANSMISSION SYSTEM			
	VHF	UHF	COLOUR	CHANNEL
Malagasy	K1	K1*		OIRT
Malaysia	B	G*	PAL	CCIR
Malawi	B	G*	PAL	CCIR
Mali (Rep.)	B	G	SECAM	CCIR
Malta	B	G	PAL	CCIR
Martinique	K1		SECAM	OIRT
Mauritania	K1	K1*		OIRT
Mauritius	B	I*	SECAM	CCIR
Mexico	M	M*	NTSC	U.S.
Monaco	L	L*/G	SECAM/PAL	FRENCH/CCIR
Montserrat W.I.	M		NTSC	U.S.
Morocco	B	H*	SECAM	MOROCCO
Mozambique	B	G	PAL	CCIR
Myanmar	M		NTSC	U.S.
Namibia	B	G		CCIR
Nepal	B	B	PAL	CCIR
Netherlands	B	G	PAL	CCIR
Netherlands Ant				
Aruba	M		NTSC	U.S.
Bonaire	M		NTSC	U.S.
Curaçao	M		NTSC U.S	
St. Martin	M		NTSC	U.S
New Caledonia	K1	K1*	SECAM	OIRT
New Guinea	B	G	PAL	CCIR
New Zealand	B		PAL	NEW ZEALAND
Nicaragua	M	M*	NTSC	U.S.
Niger	K1	K1*	SECAM	OIRT
Nigeria	B	G	PAL	CCIR
Norway	B	G	PAL	CCIR
Oman	B	G	PAL	CCIR
Pakistan	B		PAL	CCIR
Panama	M		NTSC	U.S.
Paraguay	N	N*	NTSC	U.S.
Peru	M	M*	NTSC	U.S.
Philippines	M	M*	NTSC	U.S.
Poland	D	K*	SECAM	OIRT
Puerto Rico	M	M	NTSC	U.S.
Qatar	B	G*	PAL	CCIR
Reunion	K1	K1*	SECAM	OIRT
Rumania	D	K*	SECAM	OIRT
Rwanda	K1	K1*	SECAM	OIRT
Samoa	M		(NSTC)	U.S.
Saudi Arabia	B	G	SECAM	CCIR
Senegal	K1	K1*	SECAM	OIRT

COUNTRY	T.V. TRANSMISSION SYSTEM			
	VHF	UHF	COLOUR	CHANNEL
Sierra Leone	B	G*	PAL	CCIR
Singapore	B	G*	PAL	CCIR
Somalia (Rep. of)	B	G*		CCIR
South Africa	I	I	PAL	SOUTH AFRICA
Spain	B	G	PAL	CCIR
Sri Lanka	B		PAL	CCIR
St. Kitts Island	M		NTSC	U.S.
St. Lucia	M		NTSC	U.S.
St. Pierre et Miquelon	K1			OIRT
Sudan	B		PAL	CCIR
Surinam	M		NTSC	U.S.
Sweden	B	G	PAL	CCIR
Switzerland	B	G	PAL	CCIR
Syrian Arab	B	H*	PAL	CCIR
Tahiti	K1	K1*	SECAM	OIRT
Taiwan	M		NTSC	U.S.
Tanzania	B		PAL	CCIR
Thailand	B		PAL	CCIR
Togo Rep.	K1	K1*	SECAM	OIRT
Trinidad & Tobago	M	M*	NTSC	U.S.
Tunisia	B	G	SECAM	CCIR
Turkey	B	H*	PAL	CCIR
Uganda	B	G*	PAL	CCIR
United Arab. Emirates	B	G*	PAL	CCIR
United Kingdom		I	PAL	UK/CCIR
Upper Volta (Rep.)	K1	K1*		OIRT
Uruguay	N		(PAL)	U.S.
U.S.A.	M	M	NTSC	U.S.
U.S.S.R.	D	K*	SECAM	OIRT
Venezuela	M		NTSC	U.S.
Vietnam	D	K*	SECAM	OIRT
Virgin Islands	M	M	NTSC	U.S.
Yemen Arab	B		PAL	CCIR
Yemem (P. Dem. Rep. of)	B			CCIR
Yugoslavia	B	G	PAL	CCIR
Zaire	K	K1*	SECAM	OIRT
Zambia	B	G*	PAL	CCIR
Zimbabwe	B		PAL	CCIR

Note-1 *UHF transmissions not yet planned at the present time.
Note-2 **VHS TV transmission system is not generally in use at the present time.
Note-3 Parentheses indicate colour transmission is being planned.
Note-4 Unauthorized copying of these charts is prohibited.

TV Broadcasting System In The World

※ A_3 ····· AM F_3 ··· FM

Popular name of broadcasting system	UK ch (at VHF)	CCIR ch (West Europe)	Belgium ch (at VHF)	OIRT ch (East Europe)	France ch (at VHF)	Luxembourg (at VHF)
Standard broadcasting system	A	B	C	D	E	F
Number of scanning lines	405	625	625	625	819	819
Channel band width	5MHz	7MHz	7MHz	8MHz	14MHz	7MHz
f_S-f_P band width	–3.5MHz	+5.5MHz	+5.5MHz	+6.5MHz	±11.15MHz	+5.5MHz
Audio modulation system	A_3	F_3 (±50kHz)	A_3	F_3 (±50kHz)	A_3	A_3

Popular name of broadcasting system	CCIR ch (West Europe)	UK ch (at UHF) or Ireland ch (at VHF UHF)	OIRT ch (East Europe)	France ch (at UHF)	US ch (US, Japan)	Argentina ch
Standard broadcasting sys1tem	G, H	I	$K.K_1$	L	M	N
Number of scanning lines	625	625	625	625	525	625
Channel band width	8MHz	8MHz	8MHz	8MHz	6MHz	6MHz
f_S-f_P band width	+5.5MHz	+6MHz	+6.5MHz	+6.5MHz	+4.5MHz	+4.5MHz
Audio modulation system	F_3 (±50kHz)	F_3 (±50kHz)	F_3 (±50kHz)	A_3	F_3 (±25kHz)	F_3 (±25kHz)

MEMO

■ Specifications are subject to change without notice.

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